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# fueloil & oil heat

# Filling the Sails

## OF ALASKA-BOUND CLIPPERS

Views above and below show Brodie Meters refueling a large Pan American Clipper at the Pacific-Alaska base of Pan American World Airways System.

*PAN AMERICAN WORLD AIRWAYS SYSTEM*

In the tradition of their pioneer forerunners, Pan American Clippers ply the trade routes of the World's Airways with consistent regularity. Unlike their predecessors these ships of the sky create their own wind from gasoline. Hence, the distance of any non-stop hop can be figured in fuel-hours of flying. The accurate fueling and refueling of these planes, therefore takes on a vital and important meaning. The exact gallonage measurement of Brodie Meters is employed in this service at many of Pan American World Airway's Bases.

# BRODIE METERS

**PETROLEUM METERING EXCLUSIVELY**

**SINCE 1927**

**RALPH N. BRODIE CO., Inc.**
*953 61ST STREET, OAKLAND 8, CALIFORNIA, U.S.A.*
*CABLE ADDRESS "BRODICO"*

*Division Offices: CHRYSLER BLDG., NEW YORK CITY*
*59 E. VAN BUREN, CHICAGO 5 · 302 SOUTH PEARL ST., DALLAS 1, TEXAS · 164 JACKSON, SEATTLE 4, WASH.*
*2101 S. SAN PEDRO, LOS ANGELES 11, CALIFORNIA*

VOL. 4 NO. 8

fueloil & oil heat

DECEMBER

1945

## Names in the News

*Kenneth G. MacCart* was elected president of the Petroleum Heat & Power Co., Stamford, Conn., November 28, replacing W. C. *McTarnahan* who has become chairman of the Board of Directors. *James D. Burnes,* former assistant treasurer was named treasurer and elected to the board, and W. A. *Bulger,* chief engineer, was made vice-president in charge of manufacturing. W. *Cameron Forbes,* former chairman of the board, remains as a director of the company. Mr. McTarnahan has been president of the company for more than 20 years.

W. H. *Hammond* has been promoted to the newly created post of vice-president in charge of sales of Gar Wood Industries, Inc., Detroit, it has been announced by Glen A. Bassett, president. Mr. Hammond was formerly sales manager of the hoist and body and tank divisions only and director of branches with the title of vice-president. In his new position, Mr. Hammond will supervise the sales activities of the winch and crane, road machinery, heating and boat divisions in addition to those formerly under him. He will continue as director of branches.

*Lt. Commander Thompson Morrison,* USNR, has returned to Morrison Products, Inc. after a leave of absence of forty months, thirty-five months of which were spent at sea in convoy duty in the North Atlantic, and as commanding officer of an APL in the Pacific Theater. He will resume his duties as vice-president and sales manager.

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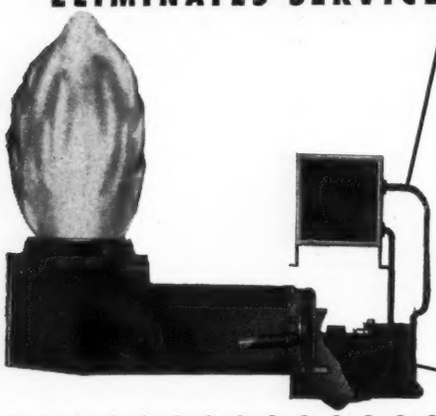
single copy: this issue 35¢

HERE'S THE 4th REASON WHY . . . . . YOU CAN MAKE MORE MONEY AS AN H. C. LITTLE DEALER

* This is Advertisement No. 4 in a Series of Eight

**THE EXCLUSIVE DESIGN OF THE *H. C. Little* VAPORIZING OIL BURNER PRACTICALLY ELIMINATES SERVICE COSTS, BECAUSE**



1 *There Are No Motors, Blowers or Fans to Wear Out*

2 *There Are No Nozzles to Clog or Need Replacement*

3 *There Is No Pilot Light to Fail — No Hi-Low Fire to Adjust*

**Read what these H. C. Little dealers say about absence of service**

**MILFORD, DEL.** "We have installed approximately 250 units on which the service has been at a minimum."

**NORFOLK, VA.** "If you follow the maker's recommendations in their application you will have very little service."

**LARNED, KAN.** "Due to the word of mouth advertising we get from our satisfied users, we have no doubt that we will double our sales this coming year."

**LANSDOWNE, PA.** "Owners like them because they are quiet, require very little service and are economical to operate."

**BALTIMORE, MD.** "This phase (service) will never cut into the dealer's profits"

**SEATTLE, WN.** "We wish to express our great appeciation for the satisfaction Little furnaces have generally given. We have had the least trouble that we have ever had with all the heaters we have handled put together."

**THESE ARE THE OTHER SEVEN REASONS WHY**
**You Can Make More Money As An H. C. Little Dealer**

- —Exclusive Burner Design
- —Exclusive CI Electric Ignition
- —40% Quicker Burner Installation
- —Complete Range of Burner Sizes
- —No Noise, Roar or Pulsation
- —Complete Line of Factory Assembled Units
- —Designed for the BIG Market of Small Homes

The almost complete absence of service made possible with the patented H. C. Little oil burner is just one of eight important competitive advantages which enable H. C. Little dealers to build a big sales volume at a profit. Write for, "How to Get Real Profits in Postwar Heating" and learn all the reasons why YOU can make more money as an H. C. Little dealer.

Dept. 12
San Rafael, California

Factory Representatives in Principal Cities

H. C. LITTLE OIL BURNER

*H. C. Little* BURNER CO.

*The Greatest Name in Low-Cost Automatic Oil Heat for Small Homes*

*Charles R. Collins,* sales manager for Quiet May, Baltimore, has been elected president of the Maryland Industrial Marketers, the Baltimore chapter of the National Industrial Advertisers' Association. It is believed that Mr. Collins is the first oilburner man to head a chapter of NIAA, an organization that has been active in promoting better industrial advertising.

W. *Howard Holcomb,* Providence, R. I., has been named factory representative for Harvey-Whipple's Master Kraft oilheating line in Maine, New Hampshire, eastern Massachusetts and Rhode Island, it has been announced by Ray G. Whipple, general manager. Mr. Holcomb has been associated with the oilburner industry since 1920 and has covered New England at various times for well-konwn manufacturers.

*Eric Ryden* and *Frank E. Johnson* recently have been added to the Research

Ryden

Johnson

and Development staff of The C. A. Olsen Mfg. Co., Elyria, Ohio. Mr. Ryden, a graduate of the Royal Institute of Technology, Stockholm, Sweden, had been associated with General Electric, Western Electric, and more recently has been devoting his time to development of heating and air conditioning equipment. Mr. Johnson, Annapolis 1934, recently has been released from his duties as a Commander in the Pacific Theatre.

*John Roland,* former chief engineer of the Stokol Division of Chrysler Airtemp, has joined the Engineering Department of Conco Eng. Works, Mendota, Ill.

# In six leading magazines

# reaching nearly 10,000,000 READERS

Some things to Remember
Some things to Remember
FORCED-WARM-AIR HEAT deserves a place at the top of every home planner's list Certainly, no other heating system—for that matter, no other item in the home—pays bigger dividends in year round comfort, convenience and over-all economy.
AUTOMATIC CONTROL of temperatures assures indoor comfort, regardless of how cold it may be outdoors. And your forced-warm-air system can add to your comfort in summer (by circulating cool night air through the house at the end of a hot day).
HIGHLY EFFICIENT and economical, a forced-warm-air system is noted for its clean, thrifty heat. You'll be delighted at how little it will cost you to operate. Delighted, too, at how clean your home stays—saving work and redecorating costs.
YOU'LL FIND forced-warm-air units available for every type of home—for use with every type of fuel. If you are planning to build, buy or remodel—tell your architect, builder or heating contractor you want the advantages of clean, warm-air heat.
DUST-STOP* AIR FILTERS are standard equipment in most modern forced-warm-air units. Replacements at low cost, available in every community. Dust-Stops are a product of Owens-Corning Fiberglas Corporation 81-RP Nicholas Building, Toledo 1, Ohio. (In Canada: Fiberglas Canada Ltd., Oshawa, Ontario)
DUSTOP
Air Filters
a FIBERGLAS product
For your greater comfort, convenience and thrift, put a forced-warm-air heating system at the top of your list of "must haves" Forced-warm-air heat is economical heat—clean heat. It will reduce house cleaning work, save redecorating costs—will help to keep your furnishings attractive and make them last longer
Forced-warm-air heat is efficient heat. And the Dust-Stop* air filters (used in most modern systems) help keep it highly efficient. They screen dirt and lint out of the system while permitting the free circulation of clean, warm air. When filled with dust and lint, the filters are replaced easily, quickly and at very low cost, with clean new Dust-Stops.
how much dirt these efficient Dust-Stop rom the air in your home. You'll be dfort and convenience of a forced-warm- a note, now, to insist on forced-warm-air me, or when you modernize your present
Toledo 1, Ohio.
STOP
Filters
AS product

## *We're again*

## TELLING *and* SELLING

### *the advantages of Forced-Warm-Air Heat*

**The makers of DUST-STOPS* are at it again—pulling a long, strong oar in behalf of the forced-warm-air heating industry.**

**Starting in the October 20th issue of the Saturday Evening Post—and November issues of *five* other popular, large-circulation magazines—powerful, colorful advertisements are telling and selling the advantages of this better winter air conditioning to American Homemakers.**

**Part of the comprehensive, long-range program, this advertising will continue month after month well into the summer. It will help focus consumers' attention on this truly modern type of home air conditioning. Most important of all, it will help you—and all in the industry—sell warm-air heat to builders of new homes and to other folks who are remodeling.**

***T. M. Reg. U. S. Pat. Off.**

**OWENS-CORNING**

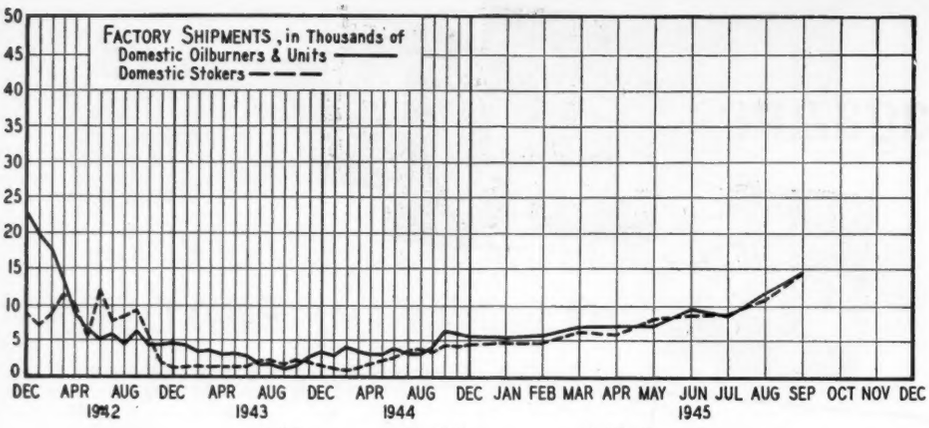
**FIBERGLAS CORPORATION**

*"Your partner whose Actions speak louder than words"*

WARM AIR · MOIST AIR · HEAT · CLEAN AIR

**Member**

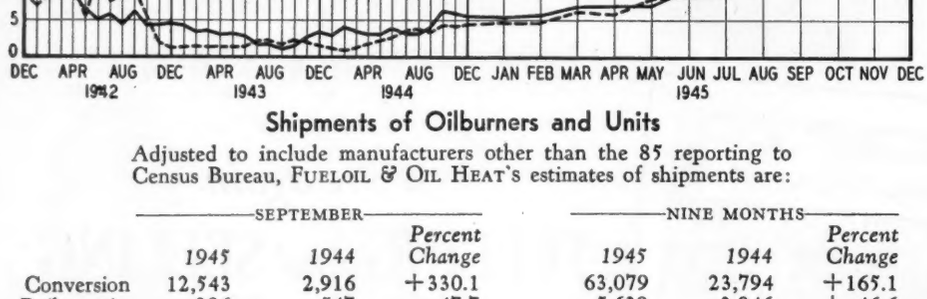
fueloil & oil heat


FACTORY SHIPMENTS, in Thousands of
Domestic Oilburners & Units
Domestic Stokers
DEC APR AUG DEC APR AUG DEC APR AUG DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
1942 1943 1944 1945

## Shipments of Oilburners and Units

Adjusted to include manufacturers other than the 85 reporting to Census Bureau, FUELOIL & OIL HEAT's estimates of shipments are:

| | SEPTEMBER | | | NINE MONTHS | | |
|---|---|---|---|---|---|---|
| | *1945* | *1944* | *Percent Change* | *1945* | *1944* | *Percent Change* |
| Conversion | 12,543 | 2,916 | +330.1 | 63,079 | 23,794 | +165.1 |
| Boiler units | 286 | 547 | — 47.7 | 5,639 | 3,846 | + 46.6 |
| Furnace units | 2,098 | 614 | +241.7 | 8,430 | 3,055 | +176.0 |
| All domestic | 14,927 | 4,077 | +266.1 | 77,148 | 30,695 | + 51.3 |
| Commercial | 2,446 | 2,716 | — 9.9 | 26,934 | 24,184 | + 11.3 |
| Total | 17,373 | 6,793 | +155.7 | 104,082 | 54,879 | + 89.6 |


STOCKS OF DOMESTIC OILBURNERS AND UNITS
(in Thousands) End of Month Shown
Factory Stocks
Dealer Stocks
JUN SEP DEC APR AUG DEC APR AUG DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
1942 1943 1944 1945

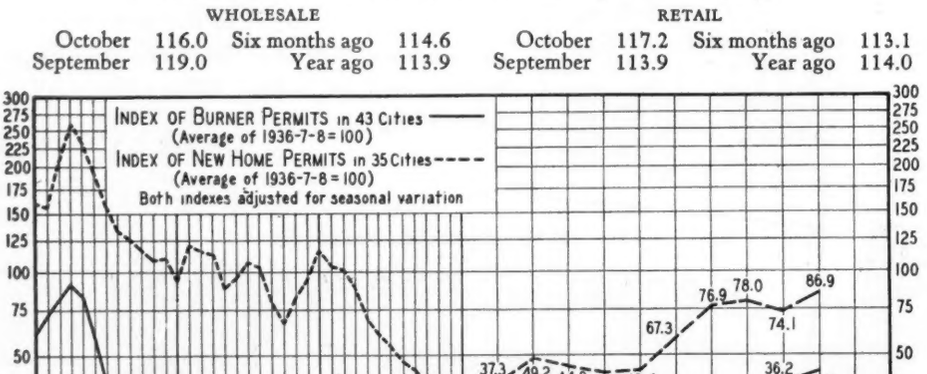
## October Minimum Retail Prices: Key Dealers

| | CONVERSION BURNERS | | BOILER-BURNERS | | FURNACE-BURNERS | |
|---|---|---|---|---|---|---|
| | *Top price** | *Low price* | *Top price** | *Low price* | *Top price**, | *Low price* |
| Highest | $350 | $195 | $800 | $... | $525 | $395 |
| Lowest | 220 | 165 | 425 | ... | 425 | 325 |
| Oct. Aver. | 275 | 183 | 555 | ... | 481 | 358 |
| Sept. Aver. | 274 | ... | 566 | ... | 480 | ... |

*Top price key dealers for conversion burners are those whose minimum retail prices are $200 or more, for boiler-burner and furnace-burner units (exclusive of ductwork) those whose minimums are $400 or over.

## Price Index: Conversion Burners: January 1940 is 100%

| | WHOLESALE | | | | RETAIL | | | |
|---|---|---|---|---|---|---|---|---|
| October | 116.0 | Six months ago | 114.6 | October | 117.2 | Six months ago | 113.1 |
| September | 119.0 | Year ago | 113.9 | September | 113.9 | Year ago | 114.0 |


INDEX OF BURNER PERMITS in 43 Cities
(Average of 1936-7-8=100)
INDEX OF NEW HOME PERMITS in 35 Cities
(Average of 1936-7-8=100)
Both indexes adjusted for seasonal variation
DEC APR AUG DEC APR AUG DEC APR AUG DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC
1942 1943 1944 1945

# *Oilheating Trends*

OCTOBER INSTALLATIONS of domestic oilburners and units are estimated at 38,750 or six times the number installed in the same month of 1944. It is difficult to reconcile this high installation figure with factory shipments of domestic oilburners, which in September were reported as less than 14,000, and particularly so in view of the lean dealer stocks. However, we have three approaches to the installation total based on permit figures and key dealer reports, and it seems quite clear that this number was installed, wherever they came from. Apparently, small burner manufacturers who are not reporting to the Census Bureau are supplying to dealers considerably larger quantities of burners than would be true under less chaotic conditions. New orders given dealers for burners continue to run far above actual installations, and for October are estimated at 76,240.

At the end of October dealers had on hand nearly 100,000 orders for domestic burners that had not been installed. The cumulative total of August, September, and October orders was approximately 172,850 while installations in the same period were 76,630. This is not, however, a measure of total sales opoprtunities, for a number of dealers report that they are refusing to take additional orders until they can see their way clear to filling those now booked. Total installations for ten months were 103,539 compared with 35,282 in the same period last year. October installations were divided: 81% conversion burners; 14% boiler-burner units; and 5% furnace-burner units.

BURNER STOCKS: Estimated stocks of domestic oilburners and units in dealer hands on October 31 were 7,180, compared with 7,610 at the end of the previous month. This again represents an average of less than one burner per dealer, so is negligible from a supply standpoint. Factory stocks of domestic burners and units on September 30, the latest available data, were 5,052. This combination of dealer and factory stocks represents the industry's all-time low.

SERVICE INCOME: Reporting key dealers for October had average service department income of $3,061, compared to $2,919 in October, 1944, a rise of 4.9%. Based on strictly service functions, the rise was considerably greater because a

number of dealers who, a year ago, were considering replacement burners as service income now credit them to the sales department, which has been revived since V-J Day.

RECONVERSIONS: After V-J Day a large number of people who had converted to coal were anxious to get back to oil for this heating season. Among dealers reporting this month, 80% say that they have completed all of these reconversion jobs ordered by their customers. The other 20% still have some to do at this late date, and in a number of instances they are waiting for new equipment rather than putting back the antiquated burner. Apparently about five out of six, countrywide, of domestic users who converted to coal have now come back to oil or have ordered reconversion. Dealers reporting this month from eastern states indicate that only 13.1% of their customers who switched to coal during the war are still burning it. From the Middle West and the Pacific Northwest dealer reports show 18.8% of customers who converted to coal have not yet come back to oil.

Dealers have an interesting problem when they have unfilled orders for new equipment to take care of reconversions, and at the same time new oilheating users clamoring for burners. Among those heard from, 54% say that they favor the reconversion customer over the new user and the other 46% think it best to let the reconverters wait. Among those who favor the reconverters, typical reasons given are: "They have been our bread and butter in the past" . . . "In most cases it was not the customers' fault that they changed" . . . "We favor reconverters because they holler louder I guess" . . . "Reconverters used to favor us with their business and we are glad to return the favor and let the unknown quality of the new one wait" . . . "An old-satisfied customer is worth two new ones" . . . "Old customers will be lost, they talk and hurt future sales, while the loss of a new customer is someone we never had" . . . "Replacements should be first, then reconversions, and then new customers." Among those who favor new customers, typical reasons are: "You can always make the old burner run a little longer" . . . "We rebuild the old burners" . . . "New customers purchase a larger tank, most times want a complete unit, while reconverters all have some coal and are willing to wait" . . . "While we can always make the old burner run until a new one is available, new customers naturally increase our oil load" . . . "Depends largely on circumstances, we favor Veterans, Aged, Sickness, etc."

## Oilburner* and Building Permits

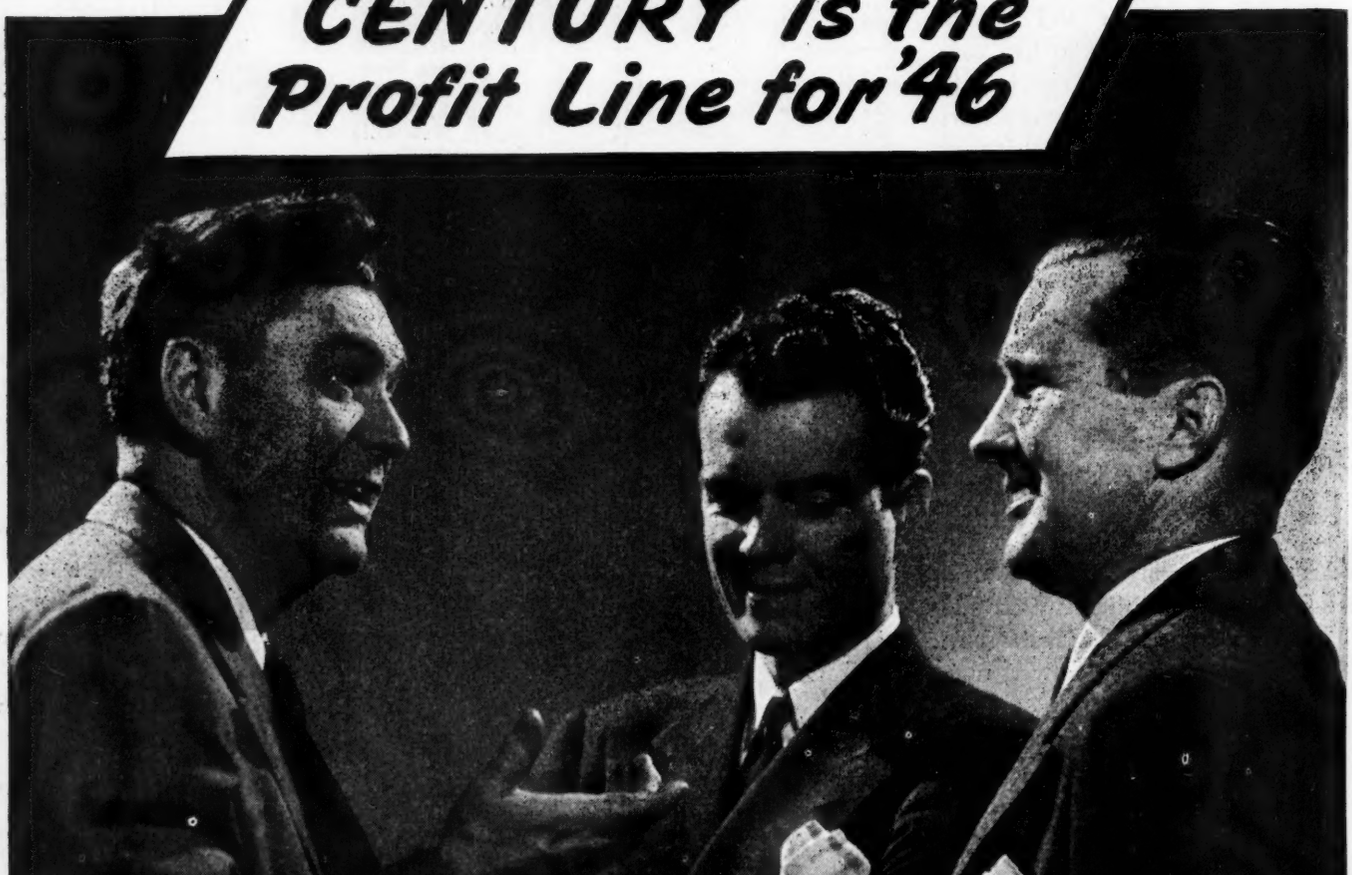
| OILBURNERS | | | | | DWELLINGS | | | |
|---|---|---|---|---|---|---|---|---|
| October | | 10 MONTHS | | | October | | 10 MONTHS | |
| 1945 | 1944 | 1945 | 1944 | | 1945 | 1944 | 1945 | 1944 |
| .. | .. | .. | .. | Baltimore, Maryland | 216 | 0 | 331 | 101 |
| .. | .. | .. | .. | Binghamton, New York | 6 | 0 | 36 | 1 |
| .. | .. | .. | .. | Boston, Massachusetts | 6 | 0 | 22 | 0 |
| 86 | 21 | 269 | 105 | Bridgeport, Conn. | .. | .. | .. | .. |
| .. | .. | .. | .. | Buffalo, New York | 8 | 2 | 52 | 45 |
| .. | .. | .. | .. | Des Moines, Iowa | 41 | 1 | 96 | 12 |
| 67 | 30 | .. | 182 | Detroit, Michigan | 374 | 69 | 2419 | 2435 |
| 23 | 4 | 97 | 21 | Elizabeth, N. J. | 12 | 0 | .. | 0 |
| 34 | 3 | 118 | 41 | Freeport, New York | .. | .. | .. | .. |
| .. | .. | .. | .. | Greenwich, Conn. | 10 | 0 | 25 | 2 |
| .. | .. | .. | .. | Hackensack, N. J. | 0 | 0 | 0 | 0 |
| 181 | 20 | 458 | 65 | Hartford, Conn. | .. | .. | .. | .. |
| 27 | 6 | 83 | 10 | Irvington, N. J. | 1 | 0 | 3 | 8 |
| .. | .. | .. | .. | Lynn, Massachusetts | 4 | 0 | 7 | 1 |
| 65 | 8 | 155 | 33 | Milwaukee, Wisc. | 137 | 46 | .. | 222 |
| 72 | 39 | 615 | 174 | Minneapolis, Minn. | 112 | 22 | 603 | 62 |
| 28 | 7 | 74 | 26 | Montclair, N. J. | .. | .. | .. | .. |
| .. | .. | .. | .. | Morristown, N. J. | 0 | 0 | 1 | 0 |
| 76 | 10 | 194 | 73 | Mt. Vernon, New York | .. | .. | .. | .. |
| 55 | 27 | 271 | 120 | New Bedford, Mass. | .. | .. | .. | .. |
| 88 | 15 | 166 | 27 | New Haven, Conn. | .. | .. | .. | .. |
| 0 | 1 | 0 | 3 | New Orleans, La. | .. | .. | .. | .. |
| 59 | 4 | 147 | 14 | New Rochelle, N. Y. | 6 | 0 | 11 | 1 |
| 348 | 22 | .. | 210 | Manhattan, Bronx, Rchd | .. | .. | .. | .. |
| 52 | 2 | .. | 19 | Norfolk, Virginia | 4 | 4 | 56 | 10 |
| 0 | 3 | 2 | 4 | Oakland, Calif. | .. | .. | .. | .. |
| 53 | 12 | 158 | 132 | Omaha, Nebraska | 36 | 11 | 256 | 347 |
| 38 | 1 | 71 | 1 | Orange, New Jersey | 0 | 0 | 1 | 0 |
| 81 | 18 | 197 | 41 | Paterson, N. J. | 0 | 0 | 2 | 2 |
| .. | .. | .. | .. | Plainfield, N. J. | 2 | 0 | 17 | 7 |
| 65 | 7 | 198 | 22 | Portland, Maine | 1 | 1 | 4 | 3 |
| .. | .. | .. | .. | Portland, Oregon | 65 | 14 | 457 | 431 |
| 43 | 13 | 133 | .. | Providence, R. I. | 6 | 0 | 19 | 1 |
| .. | .. | .. | .. | Reading, Penna. | 11 | 0 | 22 | 0 |
| 15 | 0 | 28 | 0 | Richmond, Virginia | 102 | 3 | 556 | 195 |
| 25 | 2 | 71 | 29 | Rockville Center, N. Y. | 4 | 0 | 4 | 0 |
| 20 | 2 | 49 | 7 | Salem, Massachusetts | 2 | 0 | 4 | 0 |
| 32 | 10 | 128 | 52 | St. Louis, Missouri | 18 | 0 | 31 | 0 |
| 69 | 35 | 237 | 91 | St. Paul, Minnesota | 62 | 29 | 444 | 55 |
| 150 | 2 | .. | 15 | Schenectady, N. Y. | .. | .. | .. | .. |
| .. | .. | .. | .. | Seattle, Washington | 65 | 158 | 1191 | 1100 |
| .. | .. | .. | .. | Springfield, Mass. | 3 | 1 | 176 | 14 |
| 38 | 7 | .. | 26 | Stamford, Conn. | .. | .. | .. | .. |
| .. | .. | .. | .. | Syracuse, New York | 6 | 0 | 92 | 21 |
| .. | .. | .. | .. | Trenton, New Jersey | 1 | 0 | 5 | 8 |
| .. | .. | .. | .. | Utica, New York | 1 | 0 | 7 | 30 |
| 136 | 19 | 343 | 134 | Washington, D. C. | .. | .. | .. | .. |
| .. | .. | .. | .. | West Orange, N. J. | 5 | 0 | 13 | 0 |
| 41 | 10 | 148 | 53 | White Plains, N. Y. | 3 | 0 | 6 | 0 |
| 45 | 6 | 104 | 19 | Wilmington, Delaware | 10 | 0 | 10 | 10 |
| 93 | 22 | 271 | 130 | Worcester, Mass. | .. | .. | .. | .. |
| 62 | 14 | .. | 76 | Yonkers, New York | .. | .. | .. | .. |
| 2267 | 402 | 4652 | 1427 | *Totals* | 1340 | 361 | 6979 | 4902 |
| +463.9 | | +325.8 | | *Percent Change* | +271.1 | | +42.3 | |

*Permits are not total sales in each market since none are reported from suburban areas, which normally account for 20% to 60% of total sales in each market; nor are they an accurate index where enforcement is lax. Rightly used, however, they are a useful working index.

FUELOIL CHARACTERISTICS: Now that refiners are again back in control of the disposition of their products, it is interesting to see what if any changes are apparent in the type of heating oil sold for domestic purposes. Among dealers reporting this month from all sections, 37% say that they have noticed an improvement in the quality of distillates recently received. However, only 21% say that the distillate heating oil is now as light in character, or high in gravity, as what they had prewar. The percentage reporting this was a bit lower in the East than in the Midwest, but the differential was not great. As domestic fueloil becomes lighter, compared with the particularly heavy product sold in some sections last season, dealers are finding it necessary to again adjust the oil-air ratio of burners. Among those reporting that they find the oil lighter, three out of five say that they are reducing the air in the combustion mixture as their men go around on service calls Quite a number of refiners have told deal-

(Continued on page 106)

# DEALERS AGREE- CENTURY is the Profit Line for '46



DURING 1946, Century will be ready to offer new and improved oil-fired heating equipment to distributors and dealers who are alert to the possibilities of quality merchandise at profit-producing prices. The shortage of motors and castings may cause some delay in filling your orders, but we expect to increase the production shortly after January 1, 1946. Our engineering department is constantly developing new designs and improvements that will mean more sales and greater profits for you. Through this magazine we will keep you informed of developments at Century.

*To our many friends in the industry we extend our best wishes for a Happy Holiday Season and a Prosperous 1946.*

**CENTURY ENGINEERING CORP.**

CEDAR RAPIDS, IOWA

OIL BURNERS • BOILER-BURNER UNITS • WARM AIR FURNACES
HUMIDIFIERS • WATER HEATERS • AIR CONDITIONING

# An Experience with Oilburning

## A Consumer Finds Complete Boiler Units Pay for Themselves

*This unsolicited article by a New York attorney gives the industry a consumer's-eye view of its too-frequent casual attitude toward the user's fuel dollar. His strong feeling on the matter and his conclusions, whether right or not, are important, since they tell the story that must have been told numberless times before to friends and neighbors.*

*The oilheating industry has the ability to give the public economical, automatic heat. It needs more courage to sell that ability.*

AFTER MORE THAN TWENTY YEARS of apartment living in New York City and with no knowledge of oilburners other than the name implied, my wife and I sought, in the early summer of 1938, a modest suburban home, not new and not too old, and suitable for a family of three adults. The real estate agent—realtor—if you please, made sure of pointing out the oilburners in the houses offered, for we wanted no coal fired furnace. After selecting the best within the range of our budget, we paid a deposit on a $9,000 home, once alleged to be worth $18,000, but still in excellent condition and with the all important oilburner.

We asked the agent to recommend "an oilburner man" to get the furnace in operation so that we could have hot water.

Parenthetically I would here say that the house is a 2½ story concrete-stucco structure approximately 31 by 39 feet (2000 square feet floor area), with steel casement sash, that the heating plant was a round cast iron boiler supplying 380 square feet of installed steam radiation and provided with a conversion, gun-type burner suitable for using No. 2 oil, and that domestic hot water was obtained through an indirect heater. Also that the "salesman" is a highly respected member of the community.

This "oilburner man" met us and the real estate agent, looked everything over and assured us that we were getting a fine up-to-date heating plant, that "it will be easy to heat the house," that it would cost around $175 a year for heat and hot water. We were happy at this success and signed up with him for a year's contract. He never mentioned the need of any improvements or the desirability of any tests other than merely to start up the furnace.

Cold weather set in early in the fall of 1938 and we found that our furnace burned oil—and plenty of it—that the radiators were very hot for a while and then cold for a long while, and the house chilly and the chimney hot all the time. We found it almost uninhabitable near the windows when the steam was off. Our advice proved unreliable and we named the home "our igloo" and started investigating as to what could be done.

### Starts House Improvements

In November 1938 I placed a 4" layer of mica pellet insulation over the second floor ceiling and ordered double sash for all the windows—the inside sash to take the place of the screens. These were installed during the holidays and the three outside doors were weather stripped. All this cost $237. Only then did the house become comfortable. During the winter months of 1939 I had a plumber change over the wet return under the cellar floor to a dry return, build in a hot air duct to take away hot air from the top of the furnace, installed a low water cut-off and had some other odd jobs on the heating plant at a cost of $185.

We now seemed to be set.

During the year October 1938 to September 1939, inclusive, we used 2850 gallons of oil @ 6-6½¢ per gallon. Two of the rooms having been closed off for the entire heating season.

The next season 1939-1940 we looked for an improvement in operating costs and no change was made, except to substitute a tankless heater (at a cost of $70) for the tank heater which had developed a leak. This second year we contracted to obtain oil from another supplier as we felt that our former supplier had given us poor treatment. During this second year we wrote a well known oil refiner in response to their broadcast commercial asking for information on how to save oil. One of their representatives called and advised us that we had a very poor heating plant, suggested testing the stack temperature and the $CO_2$ and recommended a complete new unit whenever we could afford it. That year we closed off only one room and used 3400 gallons of oil. By this time we were thoroughly convinced that we had a lemon and became a prospect for oilburner salesmen and were seekers of advice on the subject.

The suggestions to save from over a dozen sources can be briefly summarized thus:

| | *Estimated Cost* |
|---|---|
| Put in a draft regulator | $15 |
| Put in a baffle | 10 |
| Take the furnace apart and add another (6th) section | 150 |
| Discard the old furnace and reinstall the gun-type burner | 300–400 |
| Discard everything and put in new furnace and new oilburner, an assembly job | 500–600 |
| Discard everything and put in a complete oilburning furnace unit | 600–800 |

Most of the salesmen agreed that a draft regulator was not harmful, but many said there was no room to put it in. The baffle idea was poohpoohed by many. The added section was not O.K.ed by the boiler manufacturer. The proponents of the new furnace could not offer any hopes that the old burner would last more than "maybe another season" and claimed that the oil burning furnace units were too expensive, *no better than the assembled units, and that they probably would not stand up in service.*

The conclusion reached was to sit tight

and let the oil company and its salesmen collect. We did not want to be guinea-pigs to invest $600 or $800 in a heating plant on mortgaged property in a proposition that could not pay itself off in less than fifteen years (interest 5%) and which might not last that long.

The third year 1940-41 with the same plant and conditions called for 3,050 gallons of oil and by this time we were set to live with the "oil hog" as long as it lasted. Then along came one of the salesmen who had tried to sell us a complete oilburner furnace unit and offered a used unit (with storage tank for hot water) at a concession in price which brought an acceptance. The unit was installed early in October 1941 and incidentally was the unit the representative of the oil refiner had proposed. In 1941-1942 we used 1,750 gallons—4700 degree days—or a saving of 1350 gallons over the average of the three preceding years. The average gallons (October to May, inclusive) per degree day for the old installation was .528 and for the new was .326, or only 61%.

During the three years of operation of the old plant the average fuel consumption for the months of June, July, August and September for hot water only was 425 gallons, while during the fourth year with the complete unit the corresponding fuel consumption averaged 220 gallons, or 52%.

With the new installation there was an actual saving of over $90 the first year (fuel at 7¢). This was a normal year. Even at the top cost of $800 such a saving pays off all interest and first cost in about ten years.

The dollars and cents advantage of the boiler-burner unit was amply shown in one year's operation, but its real value—comfort under adverse conditions of oil rationing—was in store for us.

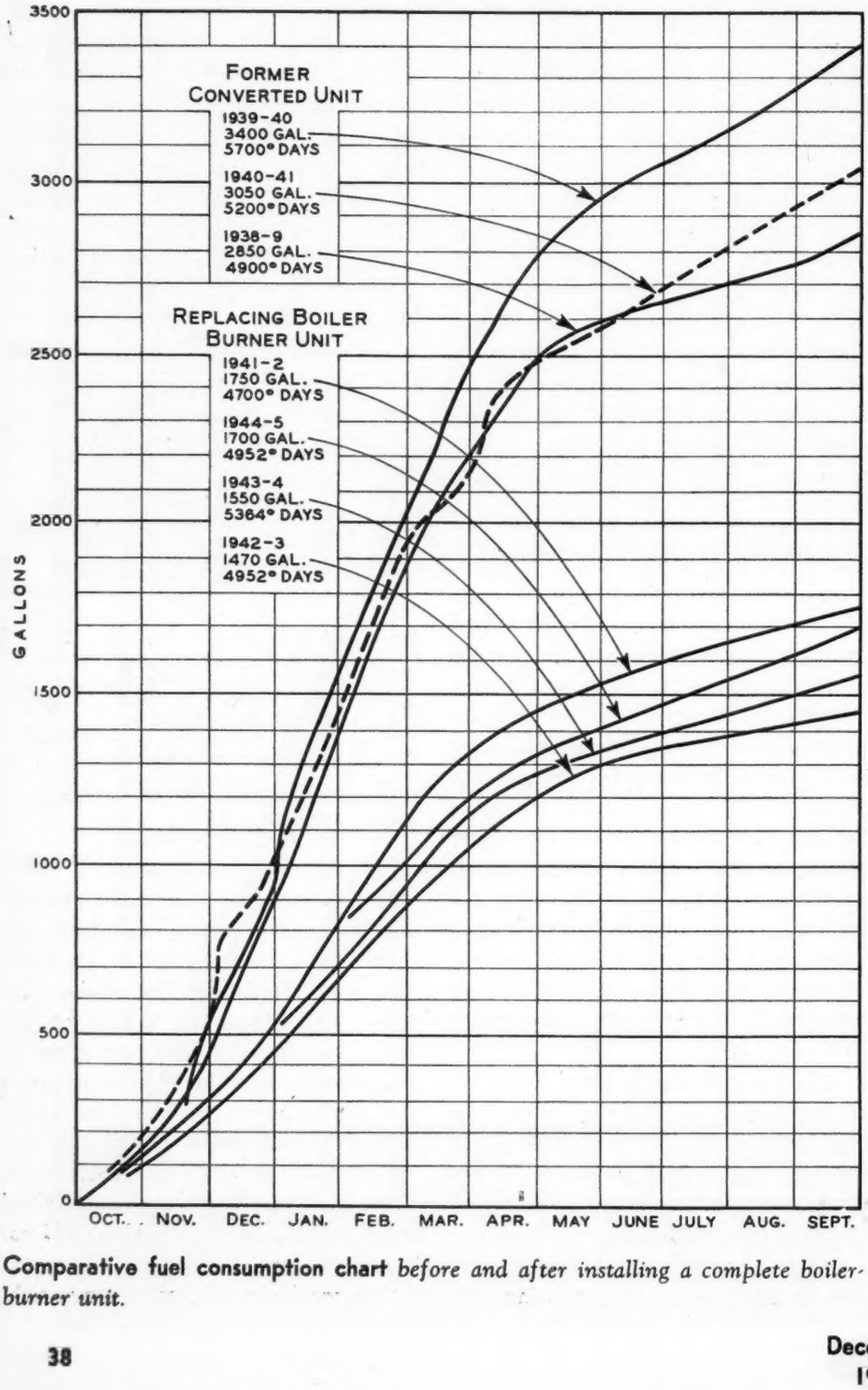
The ration allowance for the house and location for three in a family (one age 90) was 1,850 gallons of oil, about 100 gallons more than we had used when only wilful waste was avoided. Notwithstanding this allotment we patriotically tried to reduce our consumption by the 25% requested by the oil rationing program and to do this we lowered the thermostat about 2°, closed off doors to the stairway to stop circulation from the lower floor and turned off the radiator in one bedroom. In the summer the burner was run only a few hours in the evening for hot water, relying on the storage tank for water the next day. We used 1,470 gallons of oil (4952° days) and suffered no real discomfort.

About the same economies were practiced in 1942 to 1943 except that no effort was made to economize in heating hot water and the total consumption was 1,550 gallons—5364° days.

For the 1944-1945 season the thermostat was returned to the pre-rationing position and only such economies practiced as 9¢ oil dictated. 1,700 gallons were consumed. They were 4952° days.

Had we had to rely on the old plant for our source of heat during rationing, we would have had to get along on 1,850 gallons plus what extra fuel the ration board could have been prevailed upon to allow. The old plant needed 425 gallons per quarter or about 1,300 gallons per year to keep the boiler warm enough to supply domestic hot water without any steam. Deducting this from the average 3,100 gallons per year required for all purposes, there were about 1,800 gallons per year necessary for heating. Instead of having this much available, however, the ration allowance would have allowed only about

(Continued on page 105)




**Comparative fuel consumption chart** *before and after installing a complete boiler-burner unit.*

# Hot Water for Washers

## Automatic Laundry Equipment Taxes Domestic Heaters

By
O. L. Bock

*Mr. Bock, long a manufacturer of automatic, oilfired water heaters, has conducted tests with automatic washing machines to determine their hot water requirements. The results of these tests, told in the following article, show that dealers should size their water heaters carefully when selling to homes with such laundry equipment. This article is particularly significant in view of the expected increase in the use of automatic washers.*

WE CANNOT SETTLE the argument as to whether the automatic washer (Bendix Type) uses too much water or not, but we can tell you how much it does use. Our object in this is to place you, as a merchandiser of water heaters, in a position to know how and where to sell your equipment so as to give your customer satisfactory results. The accompanying table on a complete run of such a washer gives you the story on both the hot and the cold draw, and the time elapsed from the start to the end of that particular period.

During the first, or soak period, water enters the washing machine at about 100 deg. temperature. This temperature is controlled by a mixing valve, which we will refer to more fully later on. The soak period lasts a maximum of 15 minutes, after which the water is ejected and the wash period started. This soak period may be shortened to any part of the 15 minutes, or it may be eliminated altogether.

For the wash period, the operator has the choice of using water direct from the heater, at heater temperature, or tempered water at approximately 100 deg. F. This period lasts a maximum of 20 minutes, but the operator has the choice of shortening this time, if desired.

The first rinse follows the wash, and is at the same temperature. If the control is set for hot during the wash, it will be hot for this period also. If it is set for warm, both periods will be at, or near, 100°.

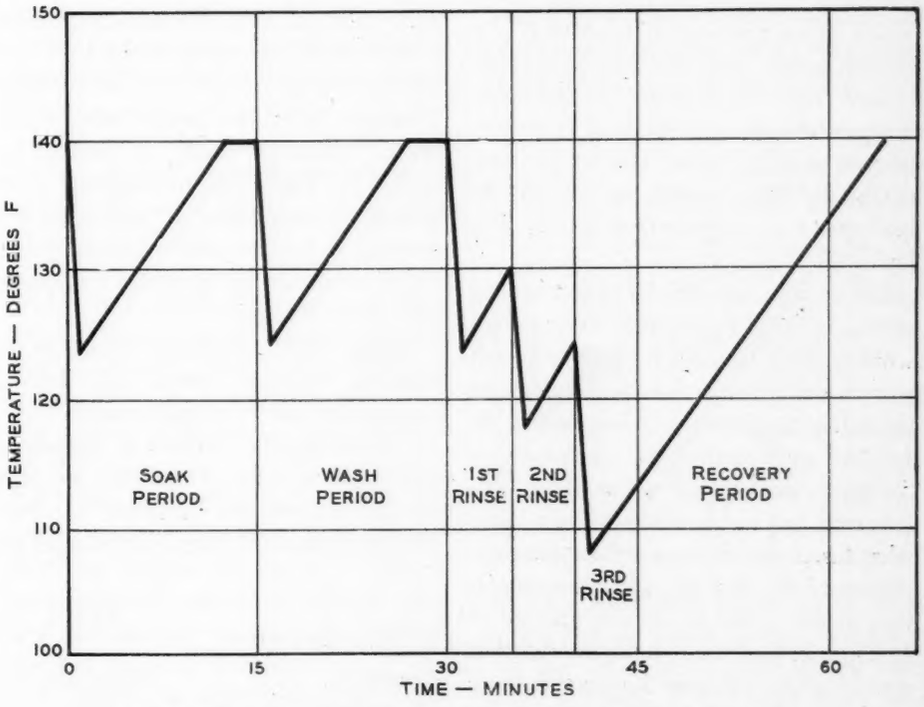
The second and third rinse are mixed water, at the 100 deg. temperature. This is automatically controlled by the clocking device, as during the soak period, so that in these three periods you cannot use hot water direct from the heater. This can be done only during the wash and first rinse.

If you will refer to the water consumption data, you will notice that a total of 21 gallons of hot, and 11.68 gallons of cold were used in one complete washing cycle. It is questionable whether a 20 gallon heater will be satisfactory to supply this demand, but just how close or how far it comes from fulfilling this demand can be seen on the following chart, using the time and withdrawal amounts indicated on the water consumption data chart.

Starting with the heater up to temperature (140 deg.), the first draw takes 4.1 gallons. The machine now operates on soak for a period of 15 minutes, during which time the heater, which has a recovery rate of 20 GPH through 80 deg. temperature rise, will be able to recover 5 gallons. This is enough to offset the draw, so that by the time water is taken for washing it is back to 140 deg.

### Water Gets Cooler

The next draw, for the wash period, takes 4 gallons, and again we have 15 minutes in which to recover, which is ample to restore it to the 140 deg. temperature. Then follow the 1st, 2nd and 3rd rinse, all within a period of 15 minutes, and using a total of 12.9 gallons. If you will refer to the draw chart, you will notice that the first rinse took 4.1 gallons of hot water. This reduced the average




WATER CONSUMPTION DATA FOR BENDIX WASHER

| | Hot Water Draw | Cold Water Draw | Total Draw | Time Elapsed in Minutes |
|---|---|---|---|---|
| Soak Period ..... | 4.1 | 2.03 | 6.13 | 15 |
| Wash Period ..... | 4.0 | 1.98 | 5.98 | 30 |
| First Rinse ..... | 4.1 | 2.41 | 6.51 | 35 |
| Second Rinse ..... | 3.7 | 2.36 | 6.06 | 40 |
| Third Rinse ..... | 5.1 | 2.90 | 8.00 | 45 |
| Totals ..... | 21.0 | 11.68 | 32.68 | 45 |

water temperature in the tank to 123.6 deg. F. A recovery period of approximately 5 minutes followed, during which time the heater restored the temperature to 130 deg. F. Then follows the second rinse, with a draw of 3.7 gallons, reducing the average water temperature in the tank to 117.5 deg. F. The heater then has approximately 5 minutes to recover, which brings the water temperature back to approximately 124 deg. F. Then follows the third rinse, which takes 5.1 gallons, reducing the average water temperature in the heater to 108 deg. F. The machine then runs for approximately 5 minutes more, during which time the water is restored to 114.5 deg. F. If the housewife now withdrew the damp wash, and wanted to start the second load, the water would not be sufficiently hot to proceed. By waiting approximately 19 minutes, the water would have been restored to 140 deg.

With this information before him, a home owner might still purchase a 20 gallon heater, knowing its limitations and being entirely satisfied to have that amount of hot water on hand. Perhaps, like many of us, he was raised in a house which had a reservoir at the end of the kitchen range, and was used to dipping his hot water out of same. To this man, it represents entire satisfaction. However, he may sell the house, and to the new tenant the water heating system may be inadequate and dissatisfaction may follow.

Let us now take the 30 gallon heater, with a 30 GPH rate of recovery, and see what happens here. For the soak and wash periods the recovery is enough to restore the water temperature. Also, during the 1st, 2nd and 3rd rinse the conditions are the same, except that we have ten gallons more hot water on hand, and a somewhat faster rate of recovery. At the completion of the run, the average temperature in the heater is 126 deg. instead of 114.5, as in the 20 gallon heater. Another way of saying the same thing is that there are 24.6 gallons of 140 deg. water, and 5.4 gallons of 60 deg. water. Of course, neither statement is strictly true, as the hot tends toward the top, and the cold toward the bottom, with some mixing in between. At this point, if the housewife wanted to start with another load, the heater has sufficiently recovered so that she could proceed. It would take approximately 10 minutes before the heater would have arrived at full recovery, yet the water in the top of the heater is sufficiently near the 140 deg. mark so that she could start a new wash period. At the end of this wash period the water would be somewhat hotter than it was at the beginning, in view of the 15 minutes allowed for the heater to recover.

This holds true only as far as the draw for washing clothes is concerned. It must be remembered that additional draw is occurring on the heater, due to the normal household demands before and during this time, with the result that occasional complaints are received on this size heater, stating it is too small. Despite this, it is the one commonly used, and sales on this size exceed all others.

We have, therefore, after some considerable experience, come to recommend the 40 gallon size as proper. It is often pointed out by the prospective purchaser, who, we will say, has a seven room house, that there are only 3 in his immediate family. For a family of this size, a 20 gallon heater might be ample, but it would not be suitable to install this small heater in so large a house. It should be pointed out to him that a house of that size has a certain definite piping loss, and also that he may sell it to a much larger family, and the system then be inadequate. In other words, the heater should be sized for the house, and not for its immediate occupants, if they should happen to total less than average at that particular time.

This same reasoning should be followed with the Bendix. A 20 gallon heater may be able to put out a batch of clothes, and for two or three people that may suffice, but times change, and so do people's habits, and the occupants of the house, so it is always better to size for the probable average to maximum use that the washer will have.

## Oil Men See Greater Fueloil Less Gasoline Demand

MORE FUELOIL AND LESS gasoline demand in the next thirteen months has been predicted by the Petroleum Industry War Council's Committee on Economics. Committee Chairman Robert E. Wilson reported to PIWC that the industry could expect a continuation of "important differences in the composition of total petroleum demands by products compared with prewar trends."

Product comparisons are shown in the table in average barrels per day of demand for the principal products.

"These figures indicate a substantial shift of total demand toward more fueloil and less gasoline for 1946," the committee explains. "These percentages are at very substantial variance with the attainable yields of the refining industry especially in view of the installation of catalytic cracking which makes yields of over 50% gasoline and around 12% of heavy fueloil readily attainable.

"The importation of substantial quantities of heavy fueloil will be necessary to meet the indicated demands if we are not to resort to uneconomic refinery operations.

"Potential demand for gasoline during 1946," the PIWC committee said, "is greater than the figure shown in the foregoing comparison of product demands, but the estimated combined effect upon the demand for gasoline of lower registrations, condition of cars, availability of parts and tires have all been reflected in the figures indicated in the comparisons."

| | *1939* | *1940* | *1941* | *1944* | *1946* |
|---|---|---|---|---|---|
| DEMAND FOR: | | | | | |
| Gasoline | 1,636,000 | 1,680,000 | 1,903,000 | 2,014,000 | 1,884,000 |
| % of total demand | 42.0 | 42.2 | 43.6 | 39.2 | 39.8 |
| Kerosene | 187,000 | 194,000 | 198,000 | 210,000 | 229,000 |
| % of total demand | 4.8 | 4.9 | 4.5 | 4.1 | 4.9 |
| Distillate Fuels | 467,000 | 491,000 | 520,000 | 691,000 | 649,000 |
| % of total demand | 12.0 | 12.4 | 11.9 | 13.5 | 13.7 |
| (Home heating fuels) | | | | | |
| Residual Fuels | 921,000 | 968,000 | 1,089,000 | 1,433,000 | 1,217,000 |
| % of total demand | 23.7 | 24.3 | 24.9 | 27.9 | 25.7 |
| (Industrial fuel) | | | | | |

# "High Rate of Chill"

## More Data on New Method for Analyzing Heating Discomfort

By
J. W. Schulz

A SKIMPY, undersized heating plant wastes fuel, makes a home chilly, and smears its designer's reputation. Arriving at proper heating plant size depends on starting with ample radiation in each room.

Many equipment dealers steer clear of skimpy heating plants by too wide a margin, however, thus head straight into the troubles of excessive radiation.

What harm in too much radiation when admittedly it cuts fuel bills? Oversize radiators detract from the appearance of rooms, and represent sloppy engineering and money spent unwisely. But discerning heating men are dead-set against rampant over-radiation mainly because it gives poor heating. After elephantine steam radiators have been installed in a foolhardy attempt "to play safe," often it is difficult to arrive at even heating and presentable heating comfort.

The first half of this article, in the November issue of FUELOIL & OIL HEAT, described the trouble which resulted from installing a modern oil heating plant.

If you are interested in refinements of heating and have not seen the first part of this article, read it now. The big complaint was that the heat in the sewing room was bumpy. Instrument check-ups showed that with radiators cold the sewing room temperature dropped much faster than the living room temperature, and that heating the radiators for 20 minutes made the sewing room unbearably stuffy.

With the heat turned off at 11 P.M., by 7 A.M. the sewing room chilled to 56°, the living room to 68½°. With the burner running 20 minutes and then idle three hours on a 40° day, the living room temperature varied two and one-half degrees, but the sewing room temperature varied seven and one-half degrees because (a) "high rate of chill" dropped the sewing room temperature rapidly with the radiators cold, and (b) large radiators in the small sewing room sent its temperature flying up when the boiler steamed for 20 minutes.

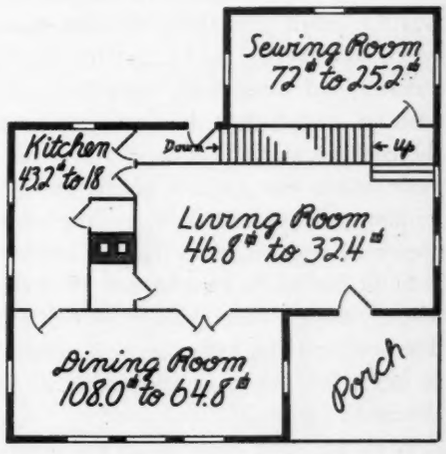
Good attention had been given to firing the boiler properly for its radiation load, tuning the thermostat differential, and adjusting the radiator vent valves. Check-ups proved each room had ample radiation.

Additional attention was now given to the heat losses of the rooms and the radiator sizes, however, because studies of the job had revealed that with the outside temperature 40° the burner ran 20 minutes then stayed idle three hours. With 72° inside the house and 40° outside, the burner ran only 10% of the time. At this rate, with the outside temperature zero or ten below on the coldest days, the burner could be expected to run only six or eight hours total out of the 24 hours in a day. These are rough figures, but they show a big fault. Under these conditions, during typical winter weather the burner would have very long "off" periods which would permit the sewing room to chill excessively before the burner started again, whereas a room which has an exceptionally high rate of chill needs steady heat. Plainly, the unusually long "off" periods were related to the complaints about bumpy heat in the sewing room.

This question came up as we discussed these matters: Why not simply reduce the firing rate to cause the rooms and radiators to receive a less powerful charge of heat during 20 minutes of burner operation, and to increase the total "on" time of any given day and thus reduce the "off" time? On thinking this over, the burner dealer realized that he had already tried working in this direction, with no success. A reduced firing rate was impractical for this one-pipe steam plant because the fire size was already so small that starting with the boiler hot it took 90 minutes of burner operation to heat all the radiators fully. Use of a smaller flame gave poor distribution of steam to the radiators, as under-firing a steam plant usually does. It caused the radiators to heat too slowly after the burner started, and made certain radiators stay cold at times. The bad effects of under-firing were especially pronounced, of course, with "on" periods as short as 20 minutes.

A close check-up now was made of the radiator sizes, and this was aimed not to find out if the radiators in each room were of ample size, but to determine how much oversize they were. The house was found to have about 50% more radiation than matched its total heat loss.

With total radiation in a house closely matched to the total heat loss according to modern methods of figuring, radiators do not, of course, stay full of steam 100% of the time to heat the rooms to 70° on the coldest day for which the heating plant is designed. Radiation is planned to cope with winds which may not be blowing on the zero day when a plant is being tested. Radiation figures do not anticipate that the sun will help heat a house, whereas actually during daytime hours the sun helps heat many homes. Although we don't consider this when we figure radiation, a home receives considerable heat from things other than the radiators, including such things as a cook stove,




electrical appliances, steam mains, an inside chimney, water heating equipment and hot water pipes, and even the occupants themselves. The heat losses of a room often are cut below what we figure by furniture placed against outside walls, window shades and drapes, and rugs on cold floors. Our best heat loss figures do not account closely for such important items as poor or good condition of the house and quality of workmanship and material used in building it. As the result

of these and other factors, the steam radiator which we think we are sizing closely for a given room may have to be filled with steam only 75% of the time to heat the room to 70° on the coldest day we have in mind. After we plan a high-quality heating system for zero weather, on putting it into operation we find that it heats the rooms on a zero day without its radiators staying at maximum temperature for hours at a time.

### Cut Installed Radiation

As our first step towards ending the bumpy heating in the sewing room, we reduced the radiator sizes to the smallest which would be practical for every room. We took into consideration the owner's installing a full set of storm doors and storm windows, and insulating all the outside walls and cold ceilings except those of the dining room, and this reduced the radiator sizes greatly below what they would have been without these heat-saving improvements. We wanted the radiators to stay hot continuously on coldest mornings even with the heat losses of the rooms reduced.

The accompanying sketch indicates how much the radiation in each room was reduced; radiation in the living room was cut from 46.8 to 32.4 sq. ft., for example. The 18 sq. ft. of radiation for the kitchen was the result of making the best guess we could make, for the 43.2 sq. ft. kitchen radiator had never been turned on, not even on coldest days, because heat from the cookstove, inside chimney, and basement made the kitchen warm enough without radiator heat. We gave the home owner strict instructions that the kitchen radiator was to be kept turned off if the kitchen stayed warm enough with it off. The sewing room radiation was reduced as much because of developments to be described presently.

With the heat losses of all the rooms reduced by the storm windows and rock wool insulation, and with radiators of proper sizes installed in place of greatly oversize radiators, the chill rate of the troublesome sewing room would still be higher than that of the living room. During an oilburner "off" period, the sewing room temperature might drop five degrees while the living room temperature dropped about two degrees. We knew that to make sure of heating the sewing room properly we should reduce its rate of chill—it would be best if we could wind up with a lower rate of chill for the sewing room than the living room.

True, the high rate of chill of the sewing room was related to its having three outside walls, having no heated room over it, and receiving no heat from the kitchen cook stove or the inside chimney—and these things we could not change. But we could improve on another important factor, for whereas the living room was over a warm basement, the sewing room was separated from the cold space under it only by an ordinary floor, which is an excellent conductor of heat compared, for example, to rock wool insulated outside walls. I decided to change the space under the sewing room floor to exceptionally warm space, thus turn a floor heat loss to a steady floor heat gain.

### Warms Smaller Space

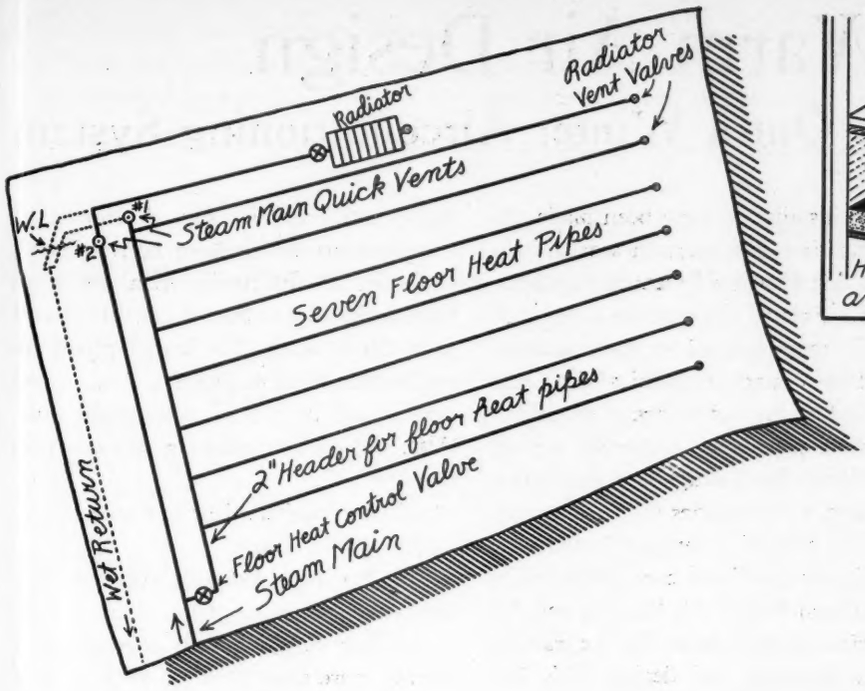
When I first mentioned this plan to the burner dealer, he thought we would insulate with rock wool the four foot high outside walls of the space under the sewing room, and heat the space with cast-iron radiators located close to the floor beams. I explained, however, that we would heat only the spaces between the 10" floor beams, which were 22" to 27" apart, by installing a 1¼" steam pipe in each of the spaces. At the ends of the beams we would use four inches of rock wool to reduce escape of heat to the outside walls to practically nothing. Under the steam pipes would be a four inch layer of rock wool supported by rigid fiber-board nailed to the beams.

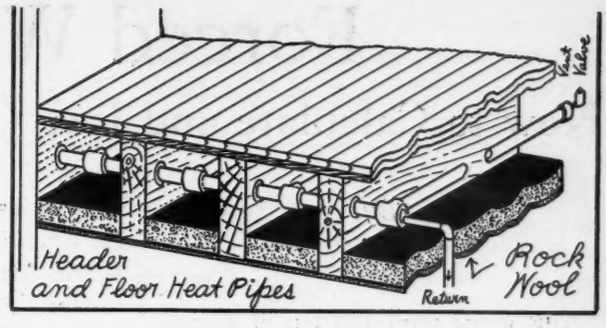
The accompanying drawings show how the pipes were installed, and the all-important steam flow and air venting arrangements. "Hand hole covers" were provided to permit reaching the adjustable vent valves at the ends of the steam pipes, and the two steam main quick vents. Each of the 1¼" pipes drips down back to the header and is installed as close to the rock wool and as far from the floor beams as feasible. The condensate in the header flows in the direction of the steam flow, permitting use of a gate valve to adjust for more or less floor heat. Actually this gate valve is in the basement of the house, where it can be reached easily.

A 25.2 sq. ft. steam radiator was installed in the sewing room, in place of the 72 sq. ft. radiator there originally, because we were not aiming to provide so much floor heat that the room would need no additional heat. The radiator gives sensible heat, that is, an occupant of the room feels heat from it. It provides radiant heat, and causes the air to circulate in the room in the fashion usual for radiator-heated rooms. In addition, use of the radiator permits easy regulation of the heat by an occupant of the room, for he may turn the radiator on or off, and alter the setting of the adjustable vent valve on the radiator.

### Floor Heat Not Excessive

This installation was observed carefully after completion of the work to obtain data on the results of using the floor heating system. During more than two years of operation, the wood floor was not ruined, as several men worried at the start it might be. It seemingly will stay in as good condition for many years as all the other floors in the house. It has been learned that during the winter a thin or thick rug may be used in the room or the floor may be left bare, as the owner desires, with no noticeable effect on the heating. High thermometer readings are not obtained by placing a laboratory type thermometer in contact with the bare floor; even during severely cold weather, a thermometer placed on the floor gives a reading within two degrees the same (usually hotter) of a thermometer placed on a table in the center of the room. However, during zero weather, when the steam pipes are hot all the time, a reading of about 85 may be obtained by placing a thermometer on the floor and covering all but the stem with a thick rug. The adjustable vent valves at the ends of the steam pipes have been kept about three-quarters open, for an average; those on the pipes which might heat slowly otherwise are wide open, and those on the pipes closest to the steam feed valve are about one-half open. There was no need to adjust these vent valves carefully. Because of the very effective steam main quick vent at the end of the header, and the use of seven vent valves for the floor heat pipes, the pipes heat fully before any of the radiators in the house are one-third heated, and this works out very well. The manual valve for turning off or decreasing the floor heat has never been used except for testing. The burner never keeps up steam pressure, in spite of the efforts to have it do this on zero mornings. For testing, how-




Details of floor heating which eliminates "high rate of chill" trouble. 1¼" steam pipe installed in each space between floor beams.

Notice the careful handling of vent valve problems.

ever, steam pressure was kept at one pound steadily for two hours, and readings were taken on a laboratory thermometer placed in a hole drilled in the floor. The bulb of the thermometer was about half an inch below the under side of the flood boards. This produced readings of 115° to 120° at different places, but no higher readings. Occupants of the room do not notice that the floor is heated except when their attention is called to it. On a severely cold day, a person asked to walk on the floor in stocking feet may report that he finds it "feels rather warm."

### Slower Chill Rate

There is no question about the overall success. The rate of chill of the sewing room now is slightly less than the rate of chill of the living room. With the heat turned off on a cold night, the sewing room chills about eight degrees in the same length of time it takes the living room to chill ten degrees. With oilburner operation that gives two and one-half degrees temperature difference in the living room, the temperature difference in the sewing room is less than two degrees.

Use of the "rate of chill" method of analyzing troubles related to heating comfort thus served very well in ending the complaints on this installation. Rooms and sections of buildings with "high rate of chill" can be recognized easily. With the help of relatively inexpensive recorders or minimum-maximum thermometers, the "rate of chill" of a problem room can be compared numerically, for example, with the "rate of chill" of the main part of a house.

### More Comfort Possible

Thinking in terms of "rate of chill" not only solves heating problems which otherwise seem mysterious, but also ends arguments which seem to be caused by nebulous differences in opinion. "Rate of chill" data and methods of thinking are invaluable in one more way: Used in certain homes and large buildings, they show up a definite need for types of heating systems (and heating controls) which give the steadiest heat obtainable today, and for zoned-heat systems. The salesman or heating engineer who talks in terms of rate of chill can advance definite reasons why special equipment is needed to solve certain problems in heating and heat control. These definite reasons take the place of vague talk about the special equipment being desirable just because it is "nice to have," "modern," and "probably more economical." In certain homes and large buildings, it can be proved numerically and very definitely that "high rate of chill" is causing heating discomfort, and it can be said definitely that certain equipment can be installed as the cure for the trouble. Arguments and discussions about heating comfort and discomfort often can be cleared of vagueness, personal opinions, and metaphysics by obtaining a few facts about the "rate of chill" of the rooms being discussed.

## U. S. Department of Labor Fueloil Prices September

FIELD INVESTIGATORS for the Department of Labor monthly check prices of principal fuels in several cities in each section of the country. Getting retail quotations from various suppliers in each market, the prices are averaged and published. Those in the table that follow were taken Sept. 15 (cents per gallon):

| | *Range* | *No. 1* | *No. 2* | *No. 3* |
|---|---|---|---|---|
| Boston | 9.10 | 8.96 | 7.58 | 7.60 |
| Bridgeport | 8.80 | ... | 7.50 | 7.60 |
| Fall River | .. | .. | 8.30 | .. |
| Manchester | 9.60 | .. | 8.30 | .. |
| New Haven | 8.80 | .. | 7.50 | .. |
| Portland, Me. | 8.70 | 8.60 | 7.50 | .. |
| Providence | 8.80 | 8.72 | 7.60 | .. |
| Baltimore | .. | 8.72 | 7.50 | .. |
| Buffalo | 9.40 | 9.40 | 8.50 | 8.50 |
| Newark | .. | 8.75 | 7.50 | 7.50 |
| *New York | .. | .. | 7.58 | .. |
| Philadelphia | .. | 8.48 | 7.43 | 7.41 |
| Rochester | 9.50 | 9.80 | 8.45 | 8.20 |
| Washington | .. | 8.80 | 7.90 | .. |
| **Chicago | 7.62 | 7.18 | 7.19 | 7.18 |
| ***Cleveland | .. | 8.24 | .. | 7.72 |
| ***Detroit | .. | 8.20 | 7.72 | 7.18 |
| **Des Moines | .. | 7.99 | 7.45 | 7.45 |
| Milwaukee | 8.20 | 8.20 | 7.70 | 7.70 |
| Minneapolis | 8.10 | 8.00 | 7.80 | 7.80 |
| Omaha | .. | 7.90 | 7.38 | 7.40 |
| **St. Louis | 8.47 | 7.83 | 7.49 | 7.49 |
| St. Paul | 8.00 | .. | 7.80 | 7.80 |
| ***New Orleans | .. | 8.72 | 7.21 | 7.21 |
| Norfolk | .. | 8.50 | 7.30 | .. |
| Richmond | .. | 8.99 | 7.50 | .. |
| **Denver | .. | 8.67 | 7.14 | .. |
| Portland, Ore. | .. | 7.06 | 6.05 | .. |
| ***Seattle | .. | 7.47 | 6.44 | .. |

*Price includes 1% sales tax.
**Price includes 2% sales tax.
***Price includes 3% sales tax.

# Forced Warm Air Design

## How to Calculate and Lay Out a Winter Airconditioning System

By
S. Konzo*

*This is the third and last of a series showing the application of the new simplified installation codes developed by the National Warm Air Heating and Air Conditioning Association. Material in this article is based on Textbook Section No. 7 in the series of warm air installation helps.*

WARM AIR, winter air conditioning systems have now grown out of the "short pants" stage. During the first ten years of its phenomenal growth a large number of theories have been formulated and a great many different approaches towards an ideal installation have been made. At the same time, the research work in the Warm Air Heating Research Residence has been directed towards the solution of the basic requirements for these systems. Backed by a fund of technical data, and confirmed by the experience of the industry's most prominent engineers we are now able to offer a design and installation manual that summarizes the basic principles. This manual is number 7 in the list of textbooks that have been prepared by the National Warm Air Heating and Air Conditioning Association for the training of new salesmen and dealers. We feel that you should know about this manual, which represents approximately two years of work on the part of close to 150 men in industry.

One of the first steps in the development of the manual was the selection of standard sizes of stacks, branch pipes, fittings, and registers. Fig. A shows the combinations which have been selected. For example, the combination which has been designated as No. 43 consists of a 12 in. x 3¼ in. stack. The branch pipe leading to this stack is either a 7 in. round pipe or a 5 in. x 8 in. rectangular duct. Also, the register sizes for this run may be either:

(a) For baseboard or low sidewall location—12 in. x 6 in.

(b) For high sidewall registers (for throws less than 13 ft.)—12 in. x 6 in.

(c) For high sidewall registers (for throws more than 13 ft.)—12 in. x 4 in.

(d) For floor registers—9 in. x 12 in.

The expected result of this standardization will be a large reduction in the previously listed catalogue items. Fewer dies and smaller storage space will be required. Lower costs should be the end result. We have the assurance of both fit-

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**Table 11**

**WARM AIR DUCT SYSTEM**

**COMBINATIONS OF PARTS SELECTED AS STANDARD**

| Combination Number | Stack Size Inches | Branch Pipe Size, Inches | | Register Size, Inches (See diagrams below) | | | | Required Increase of width of Trunk Duct (See Section G) |
|---|---|---|---|---|---|---|---|---|
| | | Round | Rectangular | Baseboard or Low Sidewall | High Sidewall: For throws less than 13 feet | High Sidewall: For throws more than 13 feet | *Floor Registers | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 41 | 10 x 3¼" | 6" | 4 x 8" | 10 x 6" | 10 x 6" | 10 x 4" | *8 x 10" | 1 in. |
| 42 | 10 x 3¼" | 6" | 4 x 8" | 10 x 6" | 10 x 6" | 10 x 4" | *8 x 10" | 2 in. |
| 43 | 12 x 3¼" | 7" | 5 x 8" | 12 x 6" | 12 x 6" | 12 x 4" | *9 x 12" | 3 in. |
| 44 | 14 x 3¼" | 8" | 6 x 8" | 14 x 6" | 14 x 6" | 14 x 4" | *9 x 12" or longer | 4 in. |
| 45 | 10 x 3¼" (2-Stacks) | 9" | 8 x 8" | (2) 10 x 6" or (1) 24 x 6" | (2) 10 x 6" or (1) 24 x 6" | (2) 10 x 4" or (1) 24 x 4" | *10 x 12" | 6 in. |
| 46 | 12 x 3¼" (2-Stacks) | 10" | 10 x 8" | (2) 12 x 6" or (1) 30 x 6" | (2) 12 x 6" or (1) 30 x 6" | (2) 12 x 4" or (1) 30 x 4" | *12 x 14" | 7 in. |

* Use these items only when the building construction or capacity requirements necessitate the use of floor registers. The sizes listed for floor registers correspond to the standard sizes for gravity warm-air furnace systems, except for the sizes of the floor box collars. The use of standard blind boxes is suggested.

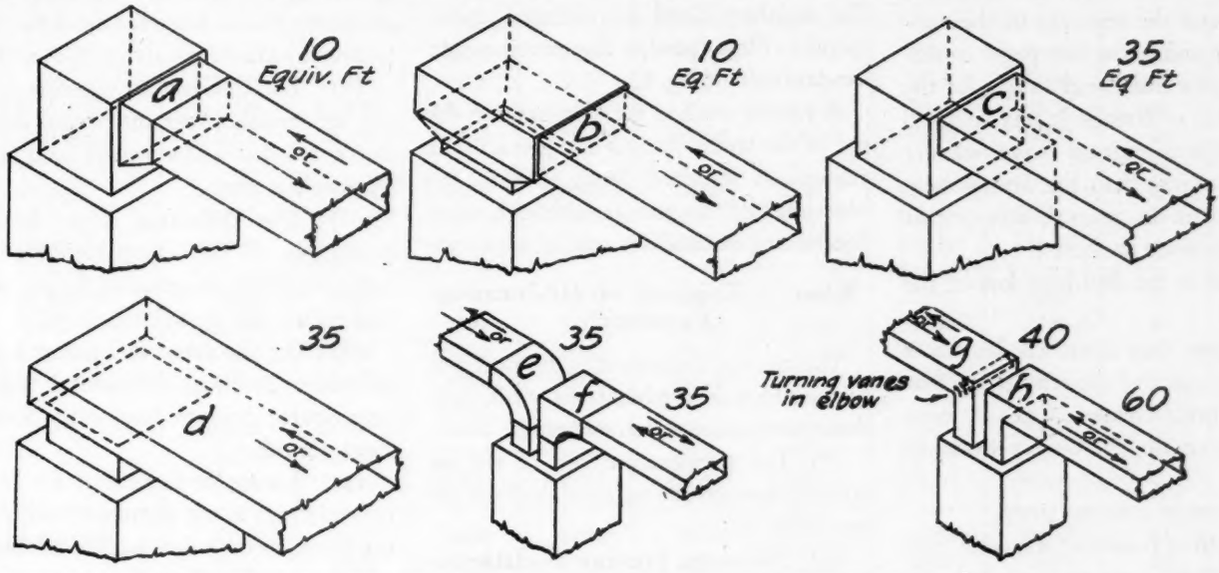
Fig. A

tings and register manufacturers that the sizes shown in Fig. A will be given priority on cost and shipment.

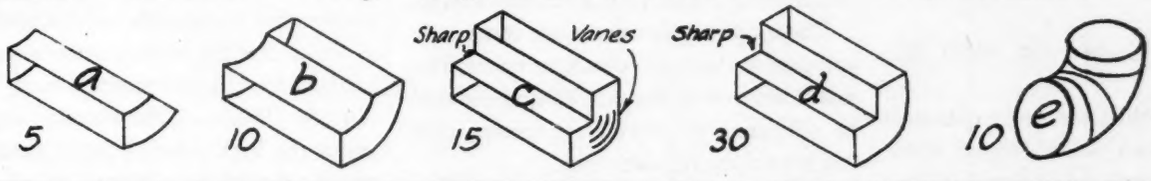
The procedure we have outlined for selecting the required combination of parts for a branch run is similar to that which was outlined in the Gravity Manual. We have purposely made the two manuals similar in approach so that the

## Fig. 8. EQUIVALENT LENGTH OF FITTINGS

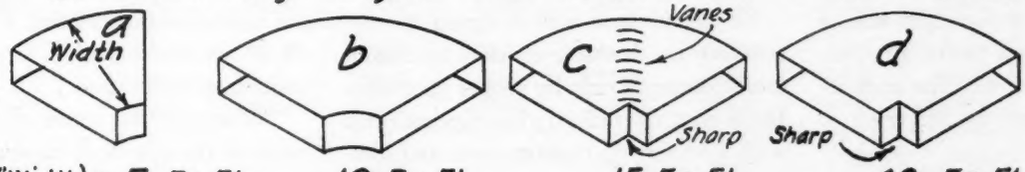
### GROUP 1. Warm-Air Bonnet and Return-Air Plenum




### GROUP 2. Short-Way Angles and Elbows for Trunk Duct

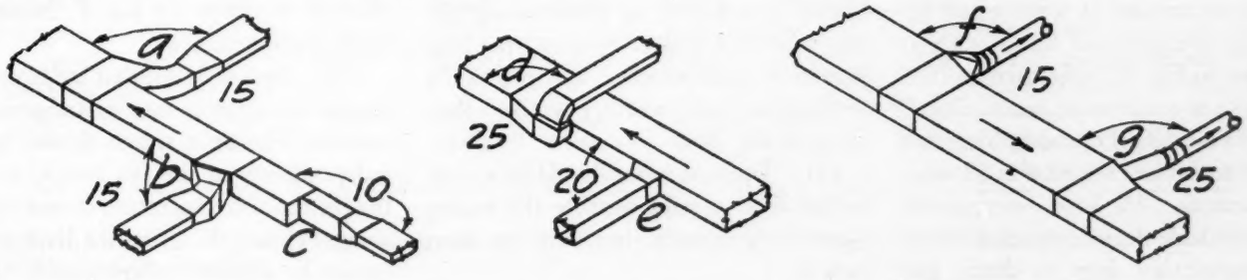



### GROUP 3. Broad-Way Angles and Elbows for Trunk Duct




| | | | | |
|---|---|---|---|---|
| (Up to 14" Width) = | 5 Eq. Ft | 10 Eq Ft | 15 Eq Ft | 40 Eq Ft |
| (15" to 24" " ) = | 10 | 15 | 20 | 50 |
| (25" to 34" " ) = | 10 | 20 | 30 | 60 |
| (35" to 44" " ) = | 15 | 30 | 40 | 70 |

### GROUP 4. Trunk Take-offs




Use above values for flow in either direction
Values apply to round or rectangular branches

Fig. B

beginner would not be confused by two separate methods of design. The following information is required:

(1) Is the room to be heated on the first or second story?

(2) How long is the warm air run, as measured from the bonnet of the furnace to the boot?

(3) What is the equivalent length of the fittings and the registers in the run? Fig. B shows one of the two pages of diagrams that give numerical values for the equivalent feet of fittings. It may be noted that streamlined fittings have smaller equivalent lengths than the fittings having sharp turns. In general, fittings that have low values are preferred.

(4) What is the Btu heat loss of the room?

When these four items are known it is possible to use two capacity tables that have been precalculated. One of these tables is shown in Fig. C. For example, given:

(1) A room on a second story.

(2) Length of basement run from bonnet to boot, 20 ft.

(3) Equivalent feet of fittings and register, 90 ft.

(4) Heat loss from room, 9000 Btu per hour.

The answer in this case can be obtained from Fig. C which is for second story rooms. In the fourth column and in section B the nearest Btu value is 9600 Btu per hour. As shown in the right side of this figure the required warm air combination number is No. 43. The sizes required can be obtained by referring to Fig. A.

The procedure is not as complicated as it appears from this description. The standard worksheets that have been prepared by the Association enable the designer to follow a logical procedure with the minimum amount of writing and figuring. The precalculated tables, such as that shown in Fig. C, have been worked out by us so as to eliminate practically all of the tedious estimating and figuring that have been commonly required in all other design methods. We have incorporated the best available data on friction loss in ducts, temperature drop in ducts, and static pressure requirements of furnaces. Wherever the designer has previously had to estimate values, we have decided to make the estimations ourselves. You may be assured, therefore, that these short cut tables are technically correct and fully defensible.

### How to Size Return Air Runs

The capacity tables, such as that shown in Fig. C, are also used for sizing the return air duct system. The combinations of parts which have been selected as a standard for the industry are shown in Fig. B. The numbers listed in column 1 correspond to those listed in the extreme right hand column of Fig. C.

A simple method for determining the size of the trunk ducts is also given in the manual. A standard depth of 8 in. has been selected for trunks, although other depths may be used for special cases.

### What Is Required of Oil-Burning Furnaces?

The manual assumes that the rating of furnace-blower combinations shall have these performance characteristics:

(1) The temperature rise of the air flowing through the furnace shall not exceed 100° F.

(2) The static pressure available for overcoming pressure losses in the distribution system shall be 0.20 in water gage.

These two requirements are commonly specified in the test codes of furnaces. The manufacturer of furnace equipment will be obligated to provide equipment that can meet these requirements.

### Installation and Operation Important

No matter how well designed the system may be, desirable comfort conditions can be obtained only by proper operation. In the past, the industry has experimented with a variety of register types and locations and with a number of control settings. The following twelve basic rules summarize the best recommendations of the industry at the present time.

(1) "A building is most satisfactorily heated by a winter air conditioning system when the blower operated for long periods in mild weather, and practically continuously in weather colder than about 40 deg. F.

(2) "The heat input should be so controlled that in mild weather the burner operated frequently, but only for short periods.

(3) "The blower should operate until the furnace is cooled; otherwise, heated air will circulate by gravity through the nearest registers, or those highest above the furnace.

(4) "The ideal method of operation, therefore, is that in which the blower operates for prolonged periods and stops only when the temperature of the circulating air is so low that gravity operation become negligible.

(5) "Where a blower is operating almost continuously, and the heat source is operating intermittently, the temperature of the air that is delivered from the registers will vary from about 80° to 150°.

(6) "Locate warm air registers so that the air stream never discharges directly into space that will normally be occupied by people at rest.

(7) "Use deflecting type registers, preferably of the adjustable type, that will control the direction of the air stream and reduce the air velocity rapidly.

(8) "Set the room thermostat for the minimum practical differential. Let the heat source operate frequently and for short periods.

(9) "Locate the fan switch (or blower control) high in the plenum chamber near the warm air duct that leads to the highest registers on the plant. In some cases, the furnace casing is provided with a specific location for fan switch and limit control, in which case the manufacturer's specified location for controls must be used.

(10) "When all the warm air registers are at the high sidewall location, the fan switch should be adjusted to start the blower when the bonnet air temperature has reached about 110 deg. F., and to shut off at about 25 deg. F. lower than the starting temperature.

"When any warm air registers are located at the low wall, baseboard, or floor locations, slightly higher air temperatures will usually be required. The fan switch should be adjusted to start the fan when the bonnet air temperature has reached about 130 deg. F., or slightly less, and to shut off at about 25 deg. F. below the starting temperature.

(11) "It is desirable that the blower be started when the bonnet air temperatures are low. The limit switch should be set, independently of the fan switch, so that the bonnet air temperature cannot exceed about 175 deg. F. Often the limit switch cannot be adjusted independently of the fan switch. In this case, set the fan switch at the lowest bonnet temperature which will heat the house in the most severe weather.

(*Continued on page 49*)

**Table 9**

**SECOND STORY.**

## CAPACITY TABLES FOR WARM-AIR AND RETURN AIR BRANCHES

| FOR UN-INSULATED METAL DUCTS | ACTUAL LENGTH (from bonnet to boot) or, (from return plenum to boot) in feet. | | | | | | | | Warm Air Combination No. | Return Air Combination No. |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 to 7 ft. | 8 to 12 ft. | 13 to 17 ft. | 18 to 24 ft. | 25 to 34 ft. | 35 to 44 ft. | 45 to 54 ft. | 55 to 64 ft. | | |
| | Col. a | Col. b | Col. c | Col. d | Col. e | Col. f | Col. g | Col. h | | |
| Section A. | 6300 | 5700 | 5200 | 4800 | 4100 | 3500 | 3100 | 2800 | 41 | 51 |
| | 10900 | 10000 | 9200 | 8500 | 7300 | 6400 | 5600 | 5000 | 42 | 52 |
| 40 to 69 | 14000 | 13000 | 12100 | 11400 | 10000 | 8800 | 7800 | 6800 | 43 | 53 |
| Equivalent | 17000 | 15900 | 14900 | 13900 | 12400 | 11100 | 9900 | 9000 | 44 | 54 |
| Feet for | | | | | | | | | | |
| Fittings | 21800 | 20000 | 18400 | 17000 | 14600 | 12800 | 11200 | 10000 | 45* | 55 |
| and | 28000 | 26000 | 24200 | 22400 | 20000 | 17600 | 15600 | 13600 | 46* | 56 |
| Register | 70000 | 65000 | 60500 | 57000 | 50000 | 44000 | 39000 | 34000 | — | 57* |
| Section B. | 5000 | 4600 | 4300 | 4000 | 3400 | 3000 | 2700 | 2300 | 41 | 51 |
| | 9000 | 8200 | 7600 | 7100 | 6200 | 5400 | 4700 | 4200 | 42 | 52 |
| 70 to 99 | 11900 | 11000 | 10300 | 9600 | 8400 | 7500 | 6700 | 6000 | 43 | 53 |
| Equivalent | 14800 | 13900 | 13000 | 12200 | 10800 | 9600 | 8500 | 7500 | 44 | 54 |
| Feet | | | | | | | | | | |
| | 18000 | 16400 | 15200 | 14200 | 12400 | 10800 | 9400 | 8400 | 45* | 55 |
| | 23900 | 22000 | 20600 | 19200 | 16800 | 15000 | 13400 | 12000 | 46* | 56 |
| | 59500 | 55000 | 51500 | 48000 | 42000 | 37500 | 33500 | 30000 | — | 57* |
| Section C. | 4100 | 3800 | 3600 | 3400 | 2900 | 2600 | 2300 | 2000 | 41 | 51 |
| | 7400 | 6900 | 6400 | 6000 | 5200 | 4600 | 4000 | 3600 | 42 | 52 |
| 100 to 139 | 10000 | 9300 | 8700 | 8100 | 7100 | 6200 | 5500 | 4800 | 43 | 53 |
| Equivalent | 12500 | 11600 | 10800 | 10100 | 9000 | 8000 | 7200 | 6500 | 44 | 54 |
| Feet | | | | | | | | | | |
| | 14800 | 13800 | 12800 | 12000 | 10400 | 9200 | 8000 | 7200 | 45* | 55 |
| | 20000 | 18600 | 17400 | 16200 | 14200 | 12400 | 11000 | 9600 | 46* | 56 |
| | 50000 | 46500 | 43500 | 40500 | 35500 | 31000 | 27500 | 24000 | — | 57* |
| Section D. | 3700 | 3400 | 3100 | 2900 | 2600 | 2200 | 2000 | 1800 | 41 | 51 |
| | 6500 | 6000 | 5600 | 5300 | 4700 | 4100 | 3700 | 3300 | 42 | 52 |
| 140 to 189 | 8600 | 8000 | 7500 | 7000 | 6100 | 5400 | 4800 | 4300 | 43 | 53 |
| Equivalent | 10900 | 10100 | 9400 | 8800 | 7800 | 6900 | 6100 | 5400 | 44 | 54 |
| Feet | | | | | | | | | | |
| | 13000 | 12000 | 11200 | 10600 | 9400 | 8200 | 7400 | 6600 | 45* | 55 |
| | 17200 | 16000 | 15000 | 14000 | 12200 | 10800 | 9600 | 8600 | 46* | 56 |
| | 43000 | 40000 | 37500 | 35000 | 30500 | 27000 | 24000 | 21500 | — | 57* |
| Section E. | 3200 | 2900 | 2700 | 2500 | 2200 | 1900 | 1700 | 1500 | 41 | 51 |
| | 5500 | 5200 | 4800 | 4400 | 3900 | 3400 | 3100 | 2800 | 42 | 52 |
| 190 to 250 | 7300 | 6800 | 6300 | 5900 | 5100 | 4500 | 3900 | 3500 | 43 | 53 |
| Equivalent | 9100 | 8500 | 7900 | 7500 | 6600 | 5900 | 5200 | 4700 | 44 | 54 |
| Feet | | | | | | | | | | |
| | 11000 | 10400 | 9600 | 8800 | 7800 | 6800 | 6200 | 5600 | 45* | 55 |
| | 14600 | 13600 | 12600 | 11800 | 10200 | 9000 | 7800 | 7000 | 46* | 56 |
| | 36500 | 34000 | 31500 | 29500 | 25500 | 22500 | 19500 | 17500 | — | 57* |

| FOR INSULATED DUCTS | Col. a | Col. b | Col. c | Col. d | Col. e | Col. f | Col. g | For ducts that are COMPLETELY INSULATED with ½ in. thick insulation from BONNET to BOOT, use these column headings. |
|---|---|---|---|---|---|---|---|---|
| | 1 to 8 ft. | 9 to 14 ft. | 15 to 20 ft. | 21 to 27 ft. | 28 to 42 ft. | 43 to 54 ft. | 55 to 70 ft. | |

* Use these items only when the building construction, or capacity requirements, necessitates the use of two adjoining stacks or floor registers.

These Tables are to use in sizing BOTH THE WARM AIR AND THE RETURN AIR branches.

Frictional resistance and temperature drops in ducts have both been accounted for in these Tables.

Fig. C

## Table 12

## RETURN-AIR DUCT SYSTEM

## COMBINATIONS OF PARTS SELECTED AS STANDARD

| Combination Number | Return-Air Intake Size, in. | | Riser Size in Inches Where Stack is Used in Stud Space | Branch Pipe Size, Inches | | When Joist Lining is Used** Number of Joist Spaces Lined and Minimum Depth of Space Required | Required Increase in Width of Trunk Duct (for 8 in. depth of duct) |
|---|---|---|---|---|---|---|---|
| | Baseboard | Floor * | | Round | Rectangular | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 51 | 10 x 6" | 6 x 10" or 4 x 14" | 10 x 3¼"† | 6" | 4 x 8" | 1 space of 3" depth | 1 in. |
| 52 | 10 x 6" | 6 x 10" or 4 x 14" | 10 x 3¼"† | 6" | 4 x 8" | 1 space of 3" depth | 2 in. |
| 53 | 12 x 6" | 6 x 12" or 6 x 14" | 12 x 3¼"†† | 7" | 5 x 8" | 1 space of 4" depth | 3 in. |
| 54 | 14 x 6" | 6 x 14" | 14 x 3¼"†† | 8" | 6 x 8" | 1 space of 5" depth | 4 in. |
| 55 | 24 x 6" or 30 x 6" | 6 x 30" | Two stacks each 10 x 3¼"† | 9" | 8 x 8" | 1 space of 6" depth or 2 spaces of 3" depth | 6 in. |
| 56 | 30 x 6" | 6 x 30" | Two stacks 12 x 3¼"†† | 10" | 10 x 8" | 1 space of 7" depth or 2 spaces of 4" depth | 7 in. |
| 57 | — | 8 x 30" | — | 12" | 15 x 8" | 1 space of 9" depth or 2 spaces of 5" depth | 11 in. |

NOTES:

* Use these items only when building construction, or capacities, requires the use of floor intakes. The sizes listed correspond to standard sizes for gravity installations, except floor box-collars. The use of standard blind boxes is suggested.

** Based on 14 in. space between joists. Use full depth of joist, except when joist depth is less than minimum depth required, in which case a drop pan must be used. This may occur when two or more return ducts are connected to the same joist space.

† If it is desired to use 14 in. x 3⅝ in. stud space, it makes no difference whether this space has protruding keys or not.

†† If it is desired to use 14 in. x 3⅝ in. stud space, the plaster base must be smooth, without any protruding plaster keys to interfere with the flow of air.

Fig. D

(12) "Set the blower for the lowest possible speed to give the volume of air required to heat the house in the most severe weather."

The recommendations for the fan switch setting may seem abnormally low to you. We feel that a true winter air conditioning system should not be operated as a booster gravity system. In other words, we do not want long periods of gravity operation occasionally interspersed with slugs of forced air. Such operations have resulted in numerous complaints of cold 70 and stratification of heated air. We are convinced that the twelve basic rules that have been enumerated are just as important as the matter of proper sizing of ducts.

The manual described in this article is designed as textbook No. 7 and may be obtained at a cost of 50 cents per copy from the National Warm Air Heating and Air Conditioning Association, 145 Public Square, Cleveland 14, Ohio.

## Distillates To Be Heavier, Refiners Explain

PREDICTIONS THAT CONTINUED use of refining equipment built during the war will make burning oils heavier and harder to burn cleanly were made at the meeting of the American Petroleum Institute Division of Refining, November 15, by Arthur E. Pew, Jr., J. Bennett Hill, and John R. Bates, all of the Sun Oil Company. Their paper, "Peace-Time Fuel Oils from War Equipment," warned that study of the problem of burning the heavier distillates must continue if the industry is "to retain its present competitive position and expand future sales of both burners and fuel."

The paper pointed out that there are now built, or building, 96 units of 1,070,000 barrels per day capacity, all but about 10% of which has been started since January 1, 1942. The preferred charging stock for these units is obtained from the middle fraction of crude, formerly available as straight-run burning oil.

"The refiner must turn to fractions heavier than the No. 2 furnace oil boiling range and to recycling of catalytic gas oil to find the charge for all existing catalytic units," the report continues. "This will have several important effects on refinery products:

"1. More cracked No. 2 fueloil will be produced from heavier stocks than was made from charging the same stocks to thermal (cracking) units and it will be of lower API gravity than that produced from charge in the No. 2 fuel boiling range.

"2. The residual fuel output will be materially less because of the substitutions of catalytic for thermal cracking.

"3. The recharging of once cracked No. 2 fuel will result in a No. 2 fuel of even lower gravity.

"It is obvious from the above that if the volume demand for high quality motor gasoline requires the running of all catalytic equipment or any major part of it, the gravity of No. 2 fuel oil will decrease markedly. This will come about either by the use of all available virgin No. 2 as catalytic charge or because of the low gravity No. 2 resulting from a heavier charge.

"Such a situation is, of course, purely hypothetical, since the demand for the higher quality motor fuel and larger amounts of distillate fuel obtained by catalytic cracking will give a refiner every impetus to keep in operation his catalytic cracking units in preference to the thermal equipment. Crude runs, too, will probably not again reach as low a level as in 1940 and will remain above a 3,800,000 minimum.

"It is evident from the above that furnace oil in the postwar period will be composed almost completely of catalytic distillate, except for such quantities as will bring the refiner sufficiently high price to justify its removal from catalytic cracking stocks. This catalytic distillate fuel is clean, stable, and non-corrosive to burner parts with which it is brought in contact. It has a higher heat of combustion per gallon of fuel. It is superior in these qualities to thermally cracked distillate, of which a considerable quantity was blended in No. 2 furnace oil, prior to the war.

"Catalytic distillate has, as pointed out above, a lower API gravity and higher carbon to hydrogen ratio than virgin stock. The lowering in gravity occurring during the cracking process depends upon factors, such as the severity of cracking and nature of charge stock. In general, however, the decrease in gravity for the same boiling range in the charge is from 4-5° API under average conditions of plant operation."

The paper concludes that the future No. 2 furnace oil will have an API gravity of about 28-30°; a 10% Distillation point of 460°, and a 90% point of 585°. This compares with a maximum 10% point of 440° under CS 12-40, and a maximum 90% point of 600°. It is pointed out that the heavier gravity of the catalytic fuel, which is indicative of a higher carbon-hydrogen ratio (less hydrogen per unit of carbon), makes the oil harder to burn cleanly in present equipment, and is more important to its burning characteristics than the small difference in the boiling range.

## Directive 59 Ended Its Three-Year Reign Nov. 30

PAW'S DIRECTIVE 59 was entirely revoked November 30, freeing importation and distribution of petroleum products in East Coast States from its control. The directive was issued in September 1942, to increase transportation efficiency, pool terminal facilities, eliminate manpower duplication and insure equitable distribution of short supplies.

All restrictions on the importation or distribution of gasoline, kerosene and fuel oils in the East Coast were rescinded effective October 1, when adequate transportation was assured to meet all needs.

Definitions, price formulas and zone boundaries were retained after October 1 to permit an orderly conclusion of the supply and distribution program instituted by the PAW in the Atlantic seaboard area in September, 1942.

## Canada Ends Oil Control

HON. C. D. HOWE, Minister of Munitions and Supply, has announced the abolition of Canada's big oil control organization which during the war ensured an adequate flow of petroleum products to the fighting forces and war industries.

At the same time the Minister announced the retirement of Oil Controller, George R. Cottrelle, of Toronto, who headed the organization which for a number of years laid down oil and gasoline rationing regulations for Canadians.

All oil control orders were revoked V-J Day. The Administrative work which remained to be done has just now been completed.

## Larger Space Available For Philadelphia Show

OIL-HEAT INSTITUTE has reserved considerably more space in the Commercial Museum, Philadelphia, than ever before, anticipating a greatly increased demand this year over any previous show. Officials report an all-time high in inquiries for space, and expect that the April 23-27 show will set a record for size and attendance.

Space sales will be open to the entire industry, and will not be confined to OHI members. Members, however, will be given their choice of space before sales are opened to non-members. It is expected

**Show Committee:** *Fred Haab (left), W. A. Kemp, Carl Jonswold, and W. A. Matheson.*

that floor plans, prices and other details of the exhibition will be mailed to the membership about the middle of December, and to others shortly afterward, and present interest indicates a sell-out before the show is opened.

Tentative plans call for a number of features at the exposition hall that will attract the trade and the public. Details of the arrangements are in the hands of a committee headed by OHI President W. A. Matheson, vice-president of Eureka Vacuum Cleaner Co., and manager of the Williams Oil-O-Matic Division, Bloomington, Ill.; William A. Kemp, manager, Pump Division, Sundstrand Machine Tool Co., Rockford, Ill.; Carl R. Jonswold, executive vice president, Arrow Petroleum Co., Chicago; and Fred C. Haab, Director, Distribution Division, Oil-Heat Institute of America, Philadelphia, with John A. Morrison, managing director, The Electrical Association of Philadelphia, advisory member. C. F. Curtin is manager of the exposition.

A. E. Hess, managing director, announced that the annual convention of Oil-Heat Institute of America will be held in Philadelphia at the same time as the exposition, with executive sessions starting April 22.

The management has asked that members of the industry defer asking for accommodations in Philadelphia hotels for the present. Arrangements are being made to set aside 2,000 rooms for the week of the show, and OHI will announce the plan when arrangements are completed.



## Factory Price Increase In Burners Early December

FACTORY PRICES ON CONVERSION burners will be raised by some flat industry-wide percentage during the first week in December, according to Fred Schwartz, branch chief in the Construction Materials Division of OPA. The individual studies made by OPA in a number of burner plants have been completed, and the rate of increase determined by OPA, but they are holding this in confidence. About the lowest increases yet given any industry were 5% and the highest 12%, so we will probably be in between. The amendment authorizing the price increase will be made to Order 48 of MPR 591, and until this is made effective, manufacturers may not increase their prices, even though their costs have been increased by legal rises in costs of motors, controls, etc. Also, the amendment will apply only to conversion burners; boiler units and furnace units are still under study, and OPA expects to announce increases on these by early January.

In the November issue of FUELOIL & OIL HEAT it was erroneously stated that burner manufacturers could raise burner prices to the extent of their actual legal cost increases in labor and parts over October 1, 1941, on the "adjusted 1941 cost" principle. The error was caused by a misunderstanding of the wording of OPA release 71311 which accompanied Amendment 2 to Supplementary Order 119. This listed conversion oilburners among other so-called "reconversion" items, outlined the forthcoming over-all increase and described the temporary interim "adjusted 1941 cost" basis.

Specifically, it said, "In the meantime, if any of these civilian manufacturers are ready to resume production in advance of other members of their industry, they may come in under today's (interim) pricing provisions." This was interpreted by us as meaning that he could immediately apply the temporary method. OPA intended it to mean that he would literally "come in," or apply to Washington for special individual permission to use the temporary basis.

## January American Magazine Features Oil Abundance

GEOLOGISTS GENERALLY AGREE that more than 150 billion barrels of oil will be found in the Western Hemisphere and they place about 50 billion of these in the United States alone, according to Eugene Holman, president of Standard Oil Company (New Jersey), who tells in the January American Magazine of new petroleum reservoirs discovered under lake and sea areas.

Contrary to the belief of many who regard the U. S. reserve as 20 billion barrels—a conservative estimate of The American Petroleum Institute—"there will be plenty of oil," declares Mr. Holman. He says the 150 billion barrels is sufficient to last more than 100 years at the present rate of consumption.

He says that "our prophets of national impoverishment" who have been predicting that "we shall have no more oil in 12 to 14 years . . . simply do not know the facts."

"All the oil," explains Mr. Holman, "is not under dry land. Some of it, we have discovered, lies under lake and sea. Perhaps the largest potential source of supply is under the shore waters of the Gulf of Mexico, where already some successful drillings have been done."

Moreover, he says, drillings are to be made in a huge sandbar off Cape Hatteras, in the belief that oil may be under the Atlantic coast.

The petroleum industry estimated the U. S. oil reserve at 20 billion barrels on the basis of past methods of extracting the "black gold" from the ground, says Mr. Holman who feels improved techniques and new discoveries will increase the percentage of yield.

"Year by year our techniques have so improved that today experts generally agree that at least 50 per cent of the oil can be recovered—about twice as much as we could formerly obtain," he states.

# Mr. Dealer

# "DL" FLOAT VALVES

## HELP BROADEN YOUR HEATER MARKET

Space heaters and furnaces equipped with "DL" Float Valves substantially broaden your heating market.—

Because there are so many places where these heaters and furnaces can be sold, either as replacement units or for new construction.

Hundreds of thousands of small homes building or built, stores, garages, gasoline stations, offices, small churches, need modern heat.

Ranges and water heaters often may be sold at the same time.

"DL" Float Valves provide one of the important essentials to a good heater—years of satisfactory, trouble free comfort. They're simple, easy to service on the rare occasions when they need it. They compensate automatically for fuel viscosity variation due to temperature change.

They're good valves—good products have them.

**DETROIT LUBRICATOR COMPANY** *General Offices:* **5900 TRUMBULL AVENUE DETROIT 8, MICHIGAN**

Division of AMERICAN RADIATOR & Standard Sanitary CORPORATION

*Canadian Representatives*— RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

"DL" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators

# Chemicals for Oilheating

## Survey of Dealer Activities in Use of Water, Sludge, Soot Cleaners

IN MAKING OILHEATING more effective and more acceptable to householders, the chemical industry has made quite a contribution in recent years. Dealers anxious to improve oilburner performance, and at the same time raise the dollar income of their service departments, have bought and used expanding quantities of water treatment materials, sludge solvents or conditioners and chemical soot removers for cleaning the combustion areas and heating surfaces in boilers and furnaces.

As a rule, chemical companies entering the oilheating field have not found the going too easy at the start. They have always had to overcome hesitancy and even suspicion on the part of dealers over taking chances on some mysterious concoction that might or might not do what is claimed for it, and might or not be worth the price asked.

This suspicion is a natural reaction to the fact that many fly-by-night operators have at one time or another tried the business, stayed a few months and were never again heard of. But dealers have confidence in a handful of manufacturers in each of the three fields . . . manufacturers who have demonstrated their worth and the apparent value of their products by staying in business for several years . . . and the dealers show this confidence with repeat orders.

### Need Market Data

As the war approached its end quite a number of large chemical manufacturers, who had greatly expanded their manufacturing facilities and were seeking new lines for the postwar market, took a look at the oilheating field as a possible product outlet. Some of them sent men into FUEL-OIL & OIL HEAT to ask for any available market data on these products, and found relatively little of it procurable, since the publication's market studies had not included much on these items.

Made aware that there was much to learn on the extent of this market, and general dealer practices in handling chemicals, 88 representative oilheating dealers were asked their experiences with the three products. The dealers were well scattered geographically, with 52 of them in the East and 36 in the Midwest and Pacific Northwest. They were well varied in size, ranging from the smallest with only 78 service customers on the books up to one with 13,000.

### Chemicals Widely Used

The practices of these dealers can be considered fairly representative of the oilheating industry. Only 12 of the 88 dealers questioned, or 14%, use none of the three chemicals. Using soot destroyer were 53, or 60%. Next in popularity was sludge treatment, with 47, or 53%, using it, while 32 of the 88, or 36%, sell water treating materials.

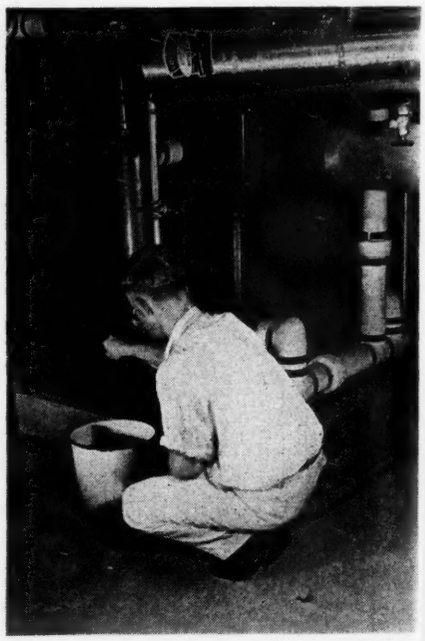
The 53 dealers using chemical soot destroyer have a total of 51,526 service customers. They have used the material during the past year on 6,859 jobs, or 13% of customers. This is not, however, the total number of applications, for in many instances they applied it more than once to a job. Two companies, one in California and the other in Connecticut, apply it on certain trouble jobs every time they make an oil delivery. Averaging all companies, they applied the material an average of 1.89 times per job using it, or the total number of applications was 12,964.

The quantity used per application ranged from ¼ lb. up to 2 lbs., with one company using 4 lbs. The average of all applications is .78 lbs. If the quantities used by the total of 88 dealers and their service customer list can be considered representative of the industry, domestic oilheating dealers sell annually around 315,000 lbs. of soot destroyer.

Asked how they apply soot destroyer to a heating plant, 23 of the 53 using it, or 43%, use a spray gun; the others throw it in by hand. Fourteen of the 53, or 26%, throw it on the fire in the combustion chamber, while four throw it into the chamber while hot, but with the fire off. Some report difficulty in getting the material into units with small flue passages.

It has been necessary to use more soot destroyer during the past year than in former years, in the experience of 32 or 60% of the companies using it. Asked why, some of the companies gave more than one reason, with changed character of the oil getting the most mentions, or 60% of total reasons given. Shortage of service manpower, making it difficult to keep all burners in proper adjustment, and thus sooting heavier, was second in the list of reasons, with 31%. The third reason, with 9% of answers, was that under war and rationing conditions people burned less oil, the burner ran less, with less chance to do a self-scouring job.

Asked what brands they use, 21 names were mentioned, with 7 leaders doing



67% of the business. Most of the dealers had tried other brands than what they now use. Asked why they like present brands better, typical reasons given were, "Ignites quicker" . . . "Creates less heat" . . . "Does a cleaner job" . . . "Works quicker" . . . "Takes less pounds" . . . "Less flashback" . . . "Non-explosive."

### Like Soot Destroyer

Three-fourths of the dealers using it say that chemical soot destroyers do a satisfactory job; the other fourth thinks they could be a lot better. They were then asked how they think the material should

# There's no such thing as *Getting Stuck with the Best*

DURING the coming months, dealers in almost every kind of business are going to be "high-pressured" to take on new and untried lines of merchandise. Some of these items will pay out. Many of them will only bring headaches to the dealer.

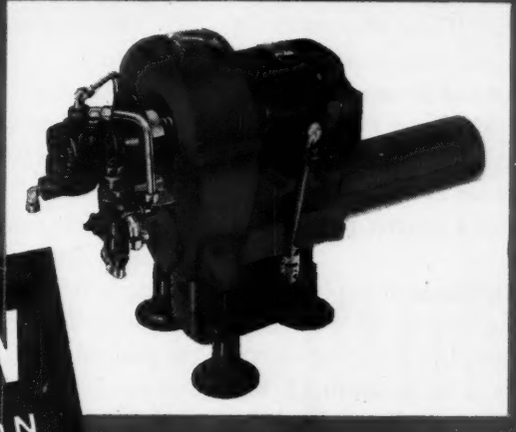
Why get stuck?

The same qualities which distinguished a worthwhile product before the war will mark the merchandise which is now—or will soon be—available. The wise dealer will stick with what he knows to be a good product rather than be stuck with a postwar "fly-by-night."

In the field of oil heating equipment, Silent Glow is pre-eminent. It is a matter of record that Silent Glow oil burn-

ers have rendered exceptional service in war and peace, and enjoy the confidence of consumer and dealer alike. That confidence will not be abused now, or in the years that follow.

The dealer who possesses a Silent Glow franchise may rest assured that he is selling the best oil burner that engineering ability and mechanical experience can possibly produce. He knows that in the coming years of keen competition he will hold an important advantage—the advantage of handling an outstanding product, widely promoted, and universally accepted.



**The SILENT GLOW**
OIL BURNER CORPORATION
Hartford, Connecticut

do a better job. Representative opinions were, "Need more efficient spraying device" . . . "Should be possible to apply directly to fire, and the gases clean the flues and chimney" . . . "Burn the soot deeper" . . . "Should be non-corrosive to equipment" . . . "With forced-air jobs it is hard to get furnace hot enough to keep soot burning" . . . "Need some way to clean pot-type burners where there is no forced draft as in a gun type" . . . "Should remove soot completely, whether there's 1/32" or one inch thickness" . . . "Should not leave a deposit after burning."

The 47 dealers using chemicals for sludge treatment have 57,975 burner service customers. They used it during the past year on 3,845 jobs, and they applied to these jobs a total of 2,738 gallons. If the experiences of the 88 dealers questioned, and their customer lists, are representative, the industry as a whole uses annually about 113,000 gallons for domestic heating. Of course, larger quantities are used on residual oil jobs and in big storage tanks, but this investigation was not concerned with those applications.

### Most Use Single Shot

The majority of the companies using it (70%) make only one time shots, usually in spring or fall or when doing the annual summer tune-up on service contracts. The other 30% makes an initial insertion into the tank and then adds a little more with each oil delivery. The most popular quantity applied is one quart, with 57% of dealers doing it; 6% apply two quarts, 33% one-half quart and 4% a half pint. Those who put in the sludge chemical on each subsequent oil delivery most commonly use a pint each drop; 43% do this. Next most popular quantity is a half pint per drop, with 21%. The others use miscellaneous quantities ranging from a quarter pint to two quarts per drop.

In discussing methods of applying the sludge treatment, nearly all put it in through the fill line, but about one-eighth of the dealers put it in the opening in top of tank. Generally, they like to have the tank near empty, then fill after putting in the chemical. One dealer puts it into the tank truck at the loading rack. Another puts it into every tank on the first drop of the season and then again in January. A few dealers dilute the material first with oil before pouring in. Two dealers say they use it only where otherwise they would have to pump the tank.

Five out of six dealers say they have used more in 1945 than in earlier years. As to reasons for this, about two-thirds attribute it to the changed character of the fuels and the other third say that during the rationing and shortage period tanks averaged much nearer empty than in normal times, and the sludge was stirred up more. Another obvious reason is that manufacturers of this material have only recently started promoting its use in the smaller household tanks.

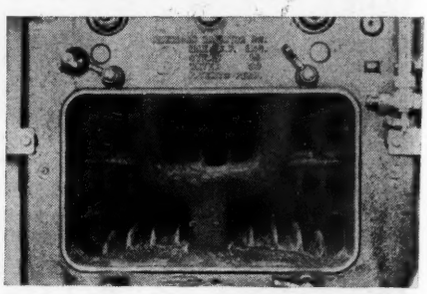
The dealers were asked in which of three principal ways did sludge cause burner trouble. The percentage indicating each of the three as most important was: clogged nozzles 40%; clogged strainers 39%; more pump repairs 21%. Also mentioned by a few as troubles caused by sludge were clogged lines and leaky tanks.

Brand names given as now in use by the dealers questioned numbered 15, with six brands having three-fourths of the business. Several of the dealers had tried numerous brands, and they tell why they like the present make best. Typical reasons for liking are: "No evaporation" . . . "Highest flash point" . . . "One application cures the condition" . . . "Contains no low-flash point solvents that disappear" . . . "Clears carbon deposits" . . . "Low price" . . . "Best known brand."

A number of dealers don't think that solvents yet do all that might be hoped for. Here are some of the characteristics they think would make a better one: "Treat oil to prevent damage by sulphur" . . . "One that will thin No. 2 oil at the bulk plant" . . . "One having a close affinity for water" . . . "One that would completely do away with sludge and not deposit it on strainers or nozzles" . . . "Quicker action" . . . "Should get rid of water, waxes or any congealing elements."

The 32 dealers who sell water treating chemicals have 36,436 domestic service customers. They cleaned 1,754 systems in the past year, using an average of .47 gallons per job. Again, if the experiences of all the dealers questioned is representative of the whole industry, domestic oilheating dealers in the year used about 55,000 gallons. Virtually all of this was used in old jobs, for very few new boilers have been installed this year. Nearly all dealers apply water treatment to new boiler installations, so in a normal peacetime year the total quantity used would be decidedly greater.

Asked how they determine when a system needs water treatment, about one dealer in five tests the water with chemicals before deciding whether or not treatment is needed. Two out of five depend upon the appearance of the water in the



glass tube, whether it's seriously discolored or oily. The others report as more important indications of need of treatment surging in the tube or priming of the system and rarely use chemicals unless these conditions occur.

There have been two schools of thought among manufacturers of water chemicals over whether or not it is necessary to flush out the system after treatment. Dealers in general feel that it is, with 78% saying they flush them out, to 22% believing that the chemical clears the water, and may as well leave it in.

One-third of the dealers say that after cleaning a system they sometimes sell the material to a customer for occasional future application by the user. Only one in four of the dealers uses a variety of chemicals for differing water conditions; the other four-fifths apply the same material to all jobs. They get a brand that they think best suits general water conditions in their region, and don't go into the problem of special conditions affecting individual homes.

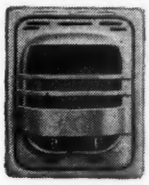
Reasons given for preferring the particular brand that they use cover only a few angles: "Safe" . . . "Does not start priming" . . . "Clears water quicker" . . . "Less work applying it" . . . "Easy to handle" . . . "No odor or color stain" . . . "No corrosive action on boiler or piping" . . . "Stays in suspension better."

As contrasted to soot destroyers and sludge chemicals, the present brand of water treatment material seemed to suit each of the 32 dealers using it. None had any useful suggestions on how it should be made to do a better job.

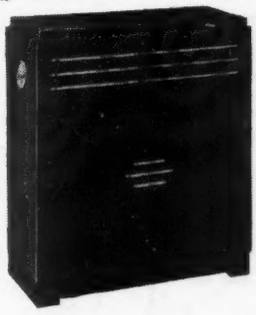
# will sell more gas heating equipment

# Postwar

## WALL AND SPACE HEATERS

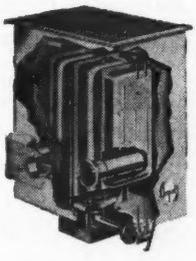


Bryant wall heaters fill the need for moderately priced, non-vented installations

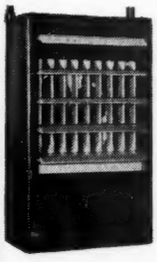


Where circulated heat is required, this Console model does the job thoroughly and efficiently

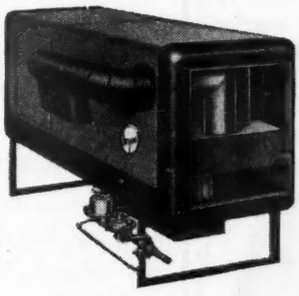
New portable space heaters are built in modern streamline designs



Floor furnaces in four types to fit every requirement

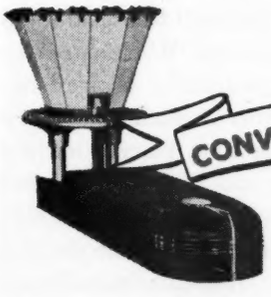


Unit heaters for garages, stores and shops



Forced-air, horizontal space-saver unit for attic installation

## CONVERSION BURNERS



Conversion burners to meet postwar modernization demand

Now you will find greater opportunity than ever before in selling the Bryant Heater line. Research and development laboratories of Bryant have provided new products and improvements that are practical, proved and salable. One "new idea" product is the Bryant Panel Heater shown at the top of the facing page . . . an attractive, vented, any-room-in-the-house heater which will go big in both modernization and new home markets.

With the Bryant line, you can offer equipment within the means of every income group and to fit every home heating need. You will have durable, long-life boilers for steam and hot-water heating systems . . . winter air conditioners and gravity furnaces in both cast iron and steel heat exchanger models. There are new and improved floor furnaces, wall and space heaters for small home and individual room heating jobs . . . a long line of specialties such as conversion burners, unit heaters, attic-installed heaters . . . all this, plus a brand-new group of Bryant automatic storage water heaters.

You will have the strong backing, too, of national advertising . . . for Bryant's 1946 campaign will total millions of impressions in many popular magazines during the coming year. In addition, there will be powerful new selling tools for your local effort . . . radio and newspaper advertising materials for use in *your own city* . . . literature that helps put the name on the dotted line.

Get the whole "new idea" story. Ask your Bryant distributor to show you the easel presentation titled "Postwar Picture of Home Heating". Learn how, in the greatest heating market ever, *you can go places with Bryant!* Bryant Heater Company, 17825 St. Clair Ave., Cleveland 10, Ohio—One of the Dresser Industries.

bryant

GAS HEATING

LET THE PUP BE FURNACE MAN

**The most complete line of gas heating equipment in the nation!**

# Industry Groups

## ASHVE Plans Annual Meeting

AMERICAN SOCIETY of Heating and Ventilating Engineers Council has announced that the 52nd Annual Meeting of the Society will be held January 28-30, 1946 at the Commodore Hotel, New York.

Pres. C.-E. A. Winslow, New Haven, Conn., has indicated that prior to the regular business and technical sessions there will be meetings of the Council, the Committee on Research, Technical Advisory Committees, and other Special Committees.

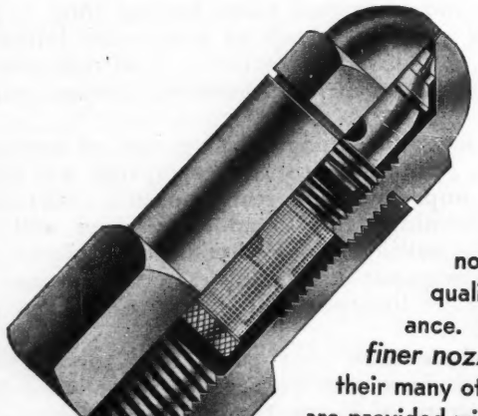
The General Chairman of Arrangements is R. H. Carpenter of the New York Chapter. Important matters that require the attention of Society members are, revisions to the Society's Charter, and amendments to the Constitution and By-Laws. The Program Committee has selected a variety of subjects for the technical sessions on problems dealing with heating, ventilating, and air conditioning.

Those nominated for office are: For President—Alfred J. Offner, Consulting Engineer, New York, N. Y.; for First Vice-President—Dr. B. M. Woods, Dir. of University Extension, University of California, Berkeley, Calif.; for Second Vice-President — G. L. Tuve, Head, Dept. of Mechanical Engrg., Case School of Applied Science, Cleveland, Ohio; for Treasurer—J. F. Collins, Jr., Secretary-Treasurer, National District Heating Association, Pittsburgh, Pa.


EDCO

OIL BURNER NOZZLES

. . . that you can depend on!



Oil burner manufacturers and dealers all over the country (and Uncle Sam too) can tell you from actual experience that EDCO nozzles are the *tops* — in quality, uniformity, performance. There are *literally no finer nozzles made.* In addition to their many other features, EDCO nozzles are provided with such large capacity, non-collapsible type MONEL strainers that *cleaning is seldom necessary.*

EDCO SERVICEMAN'S

*Nozzle Kits*

Equipped with the finest accessories needed in servicing. Designed to protect the nozzles when not in use, while giving you the tools you need in minimum space. Three sizes—Pocket size and larger.

*Write for details*

EDDINGTON METAL SPECIALTY CO.

P. O. BOX K, EDDINGTON, PENNA.


## Mass. Oil Heating Assn. Entertains Fire Chiefs

MASSACHUSETTS OIL HEATING Association, Boston, entertained twenty-four fire chiefs from the cities and towns around Boston on November 20. This is the first Fire Chiefs' Night the group has held since the war started, and plans at present contemplate its continuance in the future.

President Fred W. Heaney of the association welcomed the chiefs in a brief talk, in which he pointed out the common interest in safety, and the cordial and helpful cooperation which had been so successful in the past. Charles L. Cronin, chairman of the Fire Chief's Committee introduced the chiefs to the membership.

Chief Hall of Brookline presented a color moving picture of a new fire fighting technique employing water fog in suffocating an oil fire. He explained the tactics used in this new method as the picture was shown, and urged the oilheating industry to back efforts to install the system in neighboring towns. He said low pressure fog was superior to chemicals in fighting many types of fires, and urged other chiefs to adopt the technique in their departments.

Fred N. Beckwith, secretary, was in charge of arrangements for the meeting.

## Refrigeration Industry Book Explains Job Opportunities

AIR CONDITIONING and Refrigerating Machinery Association, Washington 5, D. C., has had published a booklet for returning veterans entitled, "Job Opportunities for the War Veteran in the Air Conditioning and Refrigeration Industry." This 16-page book explains the industry and its functions, and details job opportunities from the manufacturing plant to the service helper. Also shown is a partial list of schools, recommended reading and a list of the association membership.

## Oil Marketers Elect

NATIONAL OIL MARKETERS Association, Washington 4, D. C., held a directors' meeting at Chicago, November 13, and named Roy W. Blair (Lincoln Oil) Troy, Mo., as president. Wm. Earle White (Delta Oil) Petersburg, Va., was elected vice-president, and Paul E. Hadlick, Washington, was named secretary.

The first postwar convention of the group will be held in October 1946, at a time and place to be announced.

## Chicago OB Assn. Elects

OFFICERS ELECTED at the annual meeting of the Chicago Oil Burner Association, October 30, to serve for the coming year were: president, F. J. Moran, C. E. Sundberg & Co., vice-president, A. B. Allen, Oil Burning Engineers, Inc., secretary-treasurer, F. B. Caldwell, who has held this post for a number of years. Two new directors were elected to serve for a three year term, M. J. Boyce, Ray Heat & Power Co., and J. T. Urbain, Chicago Boiler Co.

## Committee Flirts With Idea Of Gas In "Big Inch"

COY SUGGESTIONS TO the O'Mahoney Senate Committee Investigating Petroleum Resources that the "Big Inch" pipelines might be used to carry natural gas to the Atlantic Seaboard "under certain conditions," were made by a committee on Postwar Disposal of Pipelines, Refineries and Tankers, appointed by officials of the National Oil Trade Associations. The conditioned suggestion was made after an 8-point summary which pointed out that the lines were constructed solely as war facilities and do not fit into peace-time economy; that the Government should not operate them to carry oil in competition with the petroleum industry's facilities; and that, after all, the lines are military assets and should be maintained against another emergency.

The committee on Postwar Disposal is headed by W. Alton Jones of Cities Service Company, and contains, among others, E. Buddrus, president of the Independent Natural Gas Association of America; J. French Robinson, president of the American Gas Association; and Sidney A. Sensrud of Standard Oil Company of Ohio.

Recommendations of the committee regarding the big lines were:

1. Because of their military value the "Big Inch" lines should not be scrapped.
2. The lines should not be utilized in the postwar period for the transportation of crude oil or refined products either to the East Coast or to the interior.
3. Under certain conditions it would be feasible to convert the lines to natural gas service.
4. In the event that the lines are not converted to natural gas service it is recommended that they be removed from use by Congressional direction and held as a military asset.

Other recommendations included that the Southwest Emergency Pipeline be sold to the highest bidder; that the Plantation Pipeline Extension be sold for salvage; that the Florida Emergency Pipeline be sold for salvage; and that the Ohio Emergency Pipeline be sold for salvage or abandoned.


**NOW UNDER WAY—Greatest Promotion ever launched for the benefit of Fuel Oil Dealers!**

**Big Mobilheat Ads**

**scheduled for**

**Hundreds of Newspapers**

**circulation reaching**

**Millions of Home Owners!**

SOCONY-VACUUM has already begun the job of telling millions of consumers—week after week—why oil heat is the most desirable type of home heating, why it pays them to get Complete Mobilheat Service.

This is the biggest fuel oil and oil heat advertising campaign on record, to help you win the battle for the expanding oil heat market. Insure *your* share of the profits with Mobilheat. It's one of America's largest-selling fuel oil brands—backed by tremendous resources, plus 79 years of petroleum research and marketing experience.

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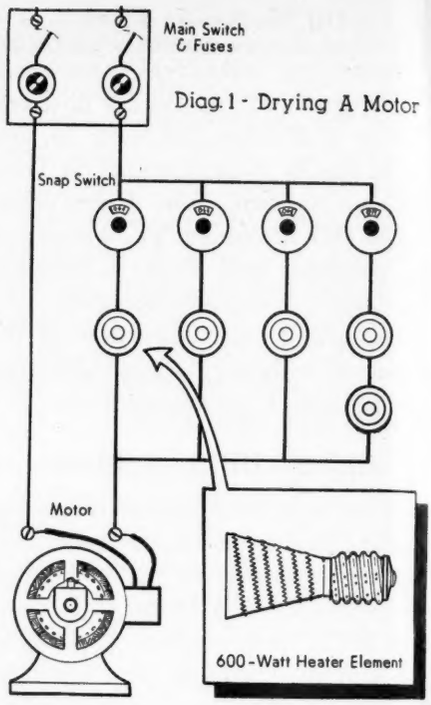
## *Everyday Snags*

### Servicing Damp Motors

SOONER OR LATER every burner dealer faces the question of what to do about damp motors. A service man can risk it and give current to a wet motor after a day or two of drying on the job. If he is lucky, the motor runs properly; unlucky, the windings burn out or the motor runs poorly, having been crippled by running it damp.

Even a reckless service man has to do something about motor dampness when the motor won't run at all, hums badly, blows fuses, or steams and smokes. To take it to the shop is all right, but what to do when he gets it there?

Diag. 1 shows convenient equipment, inexpensive and easily set up in the shop in less than an hour, for feeding low current through damp motor windings to dry them slowly and safely. Turning on the snap switch at the right gives current to the motor through two 600-watt heater elements connected in series. These heater elements with regular screw type bases are obtainable at hardware and five-and-dime stores at 25¢ to 50¢ each.



Diag. 1 - Drying A Motor

To use this equipment, prevent the motor shaft from turning by locking it with a safe rig for this. A long steel bar drilled for the motor shaft and fitted with a heavy set screw will do, or a big monkey wrench can be fitted on the flat spot of a motor shaft and tied in place. First give the windings current which is so feeble that at the end of two hours the motor feels only slightly warm—putting your hand on it may lead you to believe the outer surface is about 90°F. or 100°F. Every two hours or so increase the current flow slightly by snapping on another switch, so that at the end of eight hours you have heated the outer surface of the motor to about 150°F. (press your hand tight against the motor, and in less than ten seconds you'll pull your hand away because the motor's too hot for comfort). Keep the motor at about that temperature for eight hours if there is no hurry about getting it back to the job. Otherwise, try to speed up the drying by gradually increasing the current flow to the point at which the insulation is heated above 212°F., the steaming point, and drive out the moisture by turning it to steam. For accurate gauging of the current flow, especially if speed is imperative, an ammeter should be installed in series with the line to the motor, and every so often a megger should be applied to the motor to find out when sufficient heating has in-


Watts PRODUCTS

FOR OIL HEATING PROFITS

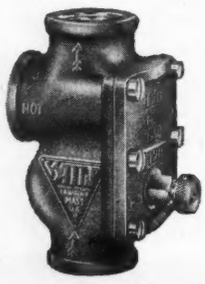
Watts No. 71

*Controls for Outlet and Tank Water Temperatures*

Domestic hot water temperature control of tank and outlet water, for the different services within the home, offers tremendous possibilities for profitable volume business.

Properly this protection and control requires two different types of valves . . . one for tankless heaters and one for indirect heaters only.

WATTS can supply you both types . . . the two most dependable, accurate, long-lived, outlet and tank water temperature controllers on the market.



Watts No. 73

**No. 71 Tempering Valve**

For tankless heaters and storage tank systems. Mixes the direct hot water with cold water and delivers to the outlets tempered water calibrated from 80° to 200° as desired. Made in sizes ¾" and 1".

**No. 73 Circulation Temperature Controller**

For indirect heaters only. Cuts hot water costs, reduces water wastage, prevents scalding, corrosion, and liming. Controls outlet water temperature. Adjustable between 120° and 180°. Sizes ¾" to 2".

Temperature and Pressure Relief Valves
Pressure Relief Valves — Vacuum Breakers
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Tempering Valves — Hot Water Heating Units

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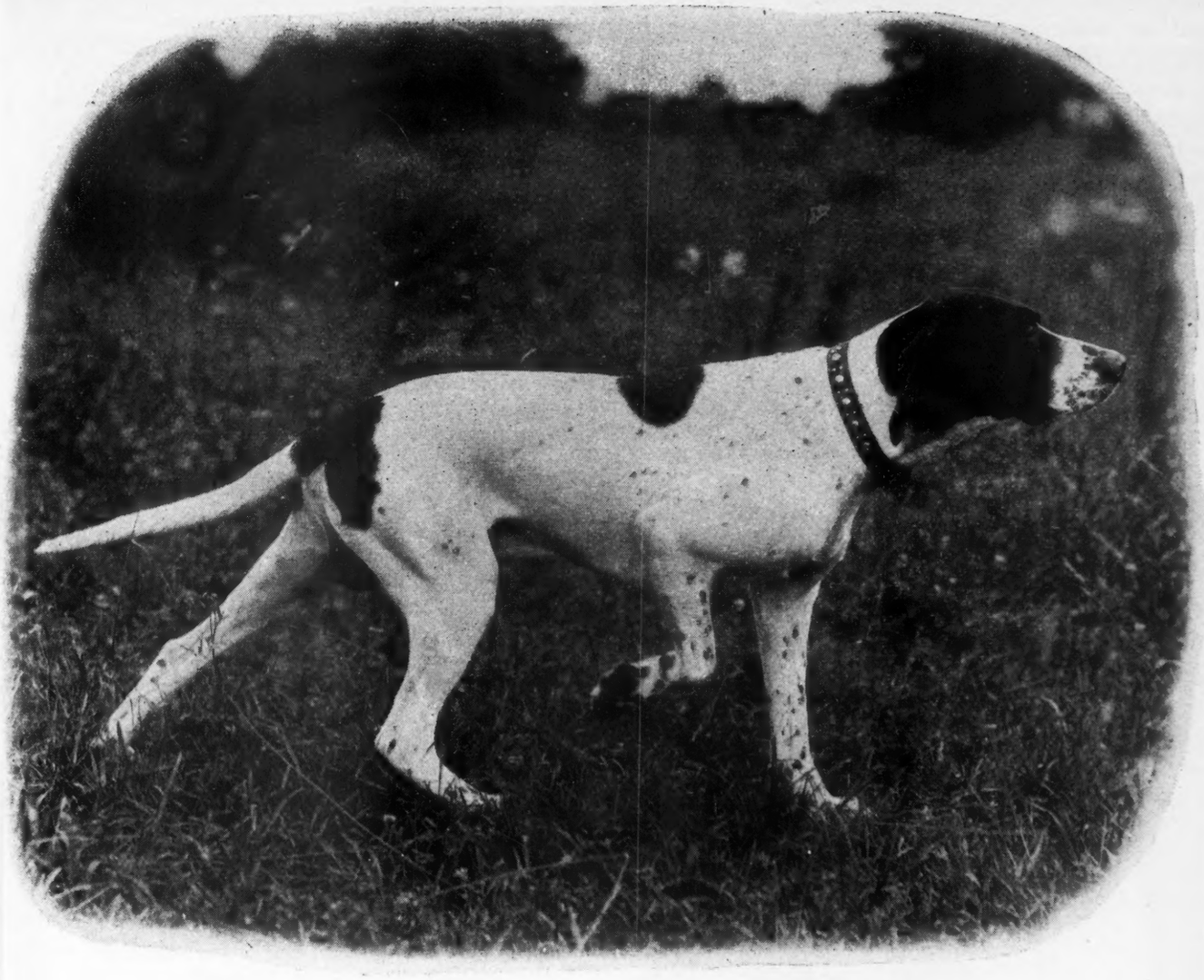
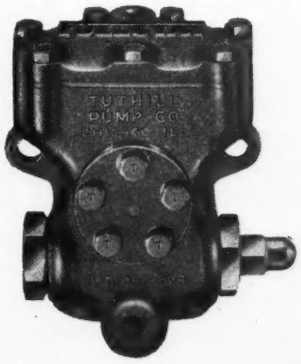
WATTS *a name to remember* for devices that PROTECT-CONTROL



# WHERE SILENCE IS GOLDEN




Fuel pumps should be seen and not heard. That's why Tuthill engineers have always built quiet operation into Tuthill Pumps and Fuelstats.

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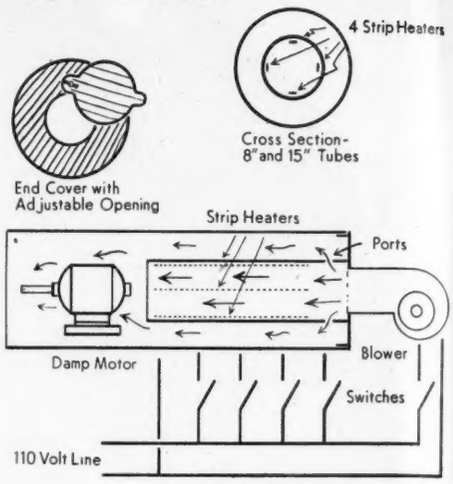
creased the insulation resistance to the normal or par for the motor. To make the entire layout more professional and shipshape, install a suitable large rheostat in place of the step-by-step low-cost resistances shown in the diagram. After drying out the starting winding of a split phase or capacitor-start motor, you can block open the starting switch to dry out the running winding separately.

Diag. 2 shows additional equipment to use in conjunction with the layout in Diag. 1. Also very inexpensive and easy to set up in an oilburner service shop, this provides for bathing the motor with hot air while you apply current to the windings to heat them and drive out the moisture. The hot, dry air helps raise the temperature of the entire motor, blows away the steam released from the windings, and of itself exerts a drying effect on wet insulation. It hastens the motor drying and reduces the risk of damaging the motor. The inner pipe can be heavy smokepipe of 6" or 8" diameter. The air driven through this pipe by the blower is heated by strip heaters or other suitable resistances rated at about 500-watts each. The same type heaters shown in Diag. 1 may be used. Four heaters may be installed and turned on by separate switches. The motor-blower unit has a motor 1/20 hp or smaller; a small ash-pit blower serves well. The inner pipe is housed in a smokepipe or other metal tube of about 12" to 16" diameter, in which the motor to be warmed is placed also as the drawing shows. The ports in the drawing are four one-inch round holes cut in the inner pipe to circulate air between it and the larger pipe. After the motor is placed in the warmer, the end cover is placed on the motor end of the large pipe, and the adjustable opening closed somewhat to arrive at the desired air flow. A laboratory thermometer or stack thermometer, inserted through a hole punched in the larger tube, may be used to measure the temperature of the air around the motor, and a control designed for a warm air furnace bonnet may be installed to control the electric heaters automatically. Provide a small amount of relatively hot air, at about 250° to 300°, not a great amount of mildly warm air. With the motor shaft locked to keep it from spinning, give feeble current to the windings using the equipment shown in Diag. 1. Aim to bring the entire motor temperature to slightly above 212°, the steaming point, in about four hours. If you have time enough for a thorough job, keep the motor slightly above 212° for another four hours following this. Don't burn the insulation or crack it and make it brittle by overheating it. Before putting the motor back on the job, coat its windings with good insulating varnish made especially for motor windings. You can use the motor warmer to speed the hardening

Diag. 2 - Motor Warmer





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**SILOO Fuel Oil Tank Solvent is the sure, safe, easy way to solve many oil burner troubles. Elimination of clogged pipe lines, oil strainers, oil filters and burners means trouble-free operation.**

**SILOO Fuel Oil Tank Solvent is the result of fifteen years research in the laboratories of Petroleum Solvents Corporation, one of the leading manufacturers of solvents for petroleum residues. Its action is immediate and positive. It is non-explosive, non-inflammable, non-corrosive, non-toxic and neutralizes acids.**

**SILOO Fuel Oil Tank Solvent is nationally advertised in twenty-five magazines. It assures satisfied customers and cuts down free service calls. Write for information about the profitable distribution and sale of SILOO Fuel Oil Tank Solvent.**

**Petroleum Solvents Corp.**

*Solvents for all types of petroleum residues*

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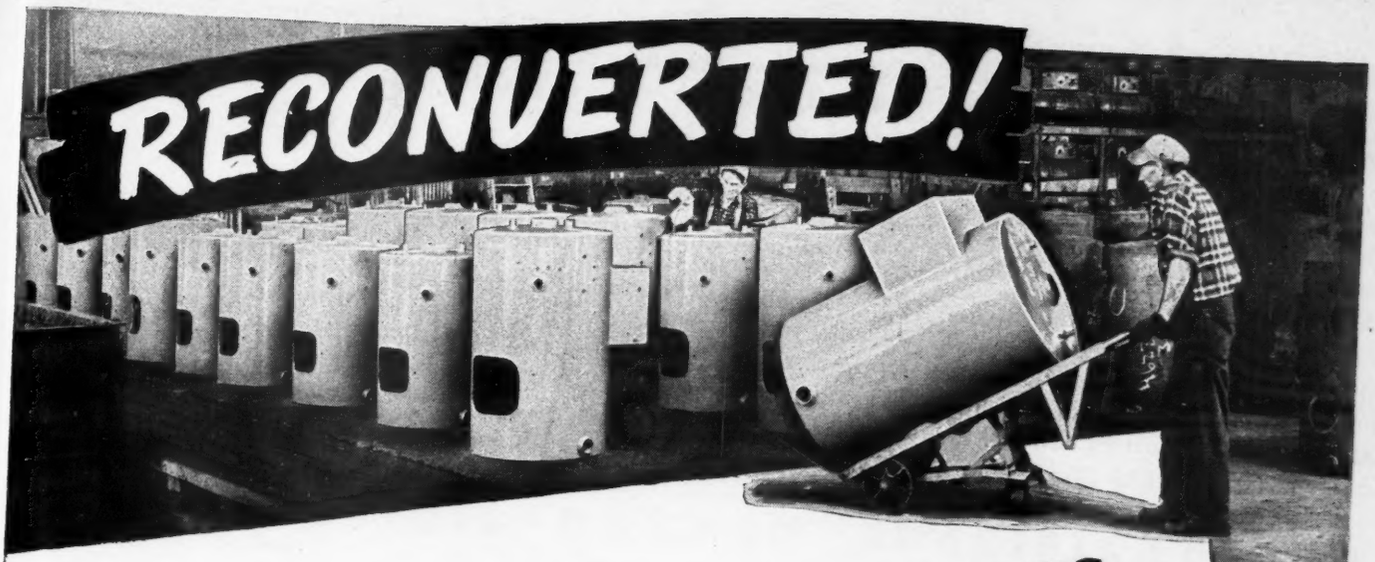


# FITZGIBBONS STEEL BOILERS *are on the way . . . .*

Reconversion is complete. Production is right up to the limits set by the volume of incoming materials. Plentiful high-capacity modern equipment provides further production volume, released as permitted by the increasing flow of raw materials. This new equipment — the finest in our sixty years of production experience — is manned by Fitzgibbons-trained master operators, whose skill in the precision fabricating of critical fighting equipment against time, is now applied to the building of essentials for fine living.

Fitzgibbons steel boilers are on the way — 400 Series (as in this photo) for small homes, traditionally-efficient "Oil-Eightys", R-Z-U Juniors, "D" type commercial and "P" Series high pressure boilers for large buildings. Fitzgibbons is reconverted, from front office door to outgoing rail spur. Write us for details of the boilers you need.

60TH YEAR

MOST ECONOMICAL IN FUEL 1880 THE FITZGIBBONS BOILER

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of the varnish. Check the starting switch of a split phase or capacitor-start motor to make sure it operates as well as new, tend to the commutator and brushes of a repulsion-induction motor, clean the motor thoroughly, lubricate the bearings, and in general make certain the motor condition equals that of any motor which has been thoroughly reconditioned.

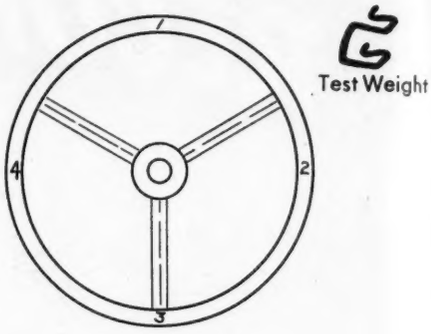
Insulate the motor warmer in Diag. 2 with 3" of rock wool if you will use it frequently. Use the same warmer to dry out damp controls, capacitors, low voltage transformers, and ignition transformers, but don't give current to these devices until after you have dried them thoroughly. Test them, for you may save them and you may not.

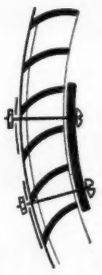
## Blower Wheel Vibration

A CERTAIN DOMESTIC year-round air conditioning plant has a three-speed motor, top speed about 1100 rpm, which drives two fairly large blower wheels direct-mounted on the motor shaft. One wheel is on each side of the motor. The motor itself has flexible mountings of large blocks of fairly soft rubber, and when the motor, shaft, and blower wheels bounce on these flexible mountings the fan housings, being secured rigidly to the base, do not bounce. After a few months' use, the motor-blower unit acted on high speed as though it had a badly bent shaft. One blower particularly jumped and wobbled about half an inch outside its regular path. At the two lower speeds the shaft and wheels ran absolutely true, however, and this ruled out possibilities of a bent shaft and pointed to poor dynamic balance at high speed. Tests showed no imperfections in the static balance. The trouble grew worse as the high-speed vibration affected the flexible mountings on the motor. In a few weeks, the fans rubbed the stationary fan housings so badly that the unit could not be operated at high speed. With no spare motor-blower unit of this type available, it was decided to attempt to balance the unit dynamically on the job and without the help of special equipment, though it was recognized that ordinarily such an effort would be ruled out as trying the impossible.

Tests weights were made of heavy solder wire. The diagram shows the double-hook shape used to permit hooking them over two blower blades. Hooked to the inside of the blades, they were held in place, with the blower running, by centrifugal force. Stabbing in the dark re-

### Balancing A Blower Wheel





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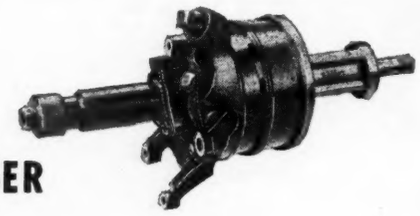
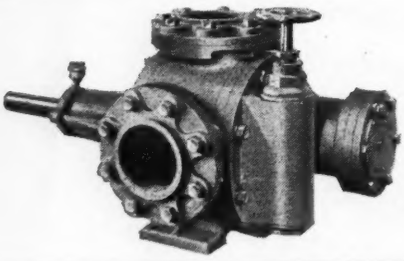
LUBRICATES
A TURBO-SUPERCHARGER





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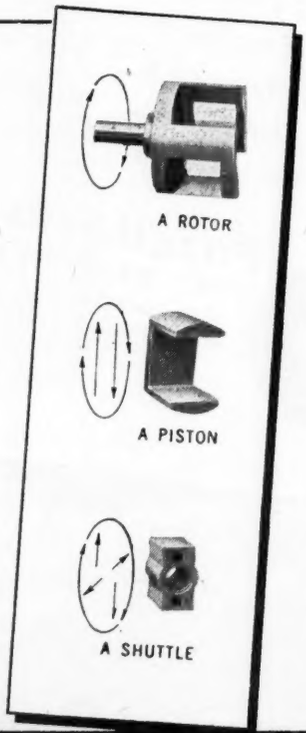
Both Flying Fortresses and your own truck tanks, or loading stations now benefit from the smooth handling characteristics and high volumetric efficiency of Yale & Towne pumps.

These pumps — now available to the petroleum industry for commercial use — are the only modern low pressure pumps that combine the most desirable features of a rotary pump with those of a piston pump. The TRI-ROTOR is a most efficient pump unit . . . it handles the product without overheating, chewing, foaming or aerating. Maintenance cost is low because there are only three moving parts.

Three heads are available: Solid, By-pass and Variable Volume Head. Supplied for all types of truck tank or bulk plant installation. Sizes: 5 g.p.m. to 200 g.p.m.

*Wire or mail your requirements to Pump Division.* The Yale & Towne Manufacturing Company, 213 Henry Street, Stamford, Connecticut. Representatives in major cities.

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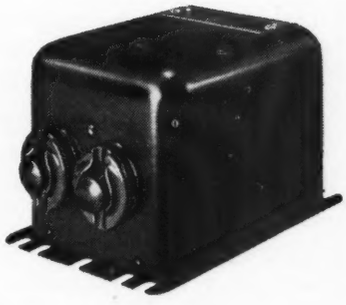
# Write "Jefferson Electric Transformers"

## INTO YOUR NEW OIL BURNER SPECIFICATIONS



Economical, trouble-free ignition transformer service is an essential feature of good oil burner performance. Jefferson Ignition Transformers assure this dependability by advancements in engineering design coupled with advanced production-control methods.

The superiority of Jefferson Transformers is based on such vital fundamental quality characteristics as: improved steel to reduce electrical losses; advanced methods of using carefully selected iron for laminations followed by Jefferson's own process of annealing; also improved compounds, materials, and impregnation methods which provide greater resistance to moisture, extreme heat and cold.

In addition to these features, full control over all manufacture, assembly and inspection insures that every Jefferson Transformer is laboratory correct whether ordered in small lots or hundreds of thousands.

When next considering oil burner specifications, select your transformers from the Jefferson Electric Line for the finest in reliable transformer service . . . JEFFERSON ELECTRIC COMPANY, Bellwood (Suburb of Chicago), Illinois. *In Canada:* Canadian Jefferson Electric Co., Ltd., 284 Pape Avenue, Toronto, Ont.

JEFFERSON ELECTRIC

# TRANSFORMERS

sulted in three weights being made of different lengths of solder wire from about three to five inches long.

The medium weight was tried first. On the blower wheel which vibrated more than the other wheel, four points were marked as the diagram shows. The weight was tried at each location. For each trial, the blower was stopped and the weight hooked at the location being tested. Then the motor was turned on at high speed and the amount of vibration observed by holding a center-punch in the hollow at the end of the motor shaft.

At location 3 the use of the medium weight cut the vibration greatly. Therefore the same weight was tried at different locations on each side of point 3. Next, different weights were tried at the location which seemed best, which was four blades clockwise from the number 3. Finally, the weight which made the motor shaft stop bouncing was tried, just for double-check, at each side of the location which seemed to give smoothest operation.

The jumping and vibration of the motor shaft was eliminated in about 30-minutes of trying the different test weights at different locations. It took an additional half hour to provide the permanent cure, which consisted of a metal strip of the proper weight (including bolts, washers, and fastening strips) bolted securely inside the blower wheel at precisely the proper location. The lower drawing shows how this was fastened inside the wheel so that centrifugal force made it bear on four blades.

The same procedure has been used since to obtain smoother, quieter operation from rigidly-mounted motors and blowers on pressure burners. As this method of balancing calls for considerable patience and perseverence, and perhaps a bit of luck thrown in, you'd better try using it only when you have no quicker and more positive way out of trouble.


*Why You Should Select*

**BETTENDORF** *Oil Burners*

**• Dependability of Bettendorf Burners comes from years of research and background of precision manufacturing experience. Long life, efficiency of operation, minimum service, satisfied owners are the assets of a Bettendorf franchise. For profitable sales in 1946, select Bettendorf Oil Burners.**

**BETTENDORF OIL BURNER COMPANY**

*Marshalltown, Iowa*


## Oiling Burner Motors

LAST SPRING a burner dealer posted a notice for his service men: "Never add lubricating oil to burner motors while they are running. Stop the motor, wait five minutes, then oil the bearings." Recently the notice was taken down because the dealer learned it does not apply to typical oilburner motors. The thought may have come from experience with large commercial and industrial motors which have oil reservoirs and oil rings. It is wrong to bring the oil level up to the proper point while some of these motors are running, because when in operation the oil rings hold considerable oil out of the reservoirs. The reservoirs are marked for the proper oil level with the motors idle, not running, and if you bring up the oil level to the normal mark with the motors running, when they are stopped the oil level rises above the normal mark. Too much oil is bad in these motors as in all motors. At best, the extra oil drips out of the bearings and forms pools on the floor; at worst, it finds its way to the windings and other internal motor parts which frequently are damaged by a combination of oil and dust which is caught and collected by the oil in the wrong place.

The big thing with oilburner motors is not to fail to oil them, and not to over-oil them whether they are running or idle. The usual 1/6 hp motor on a typical burner installation needs oiling two or

## Consumers Company and Mack Truck

# A HARD-TO-BEAT HEATING TEAM!

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*Mack Trucks, Inc., Empire State Building, New York, N. Y. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and dealers in all principal cities for service and parts.*

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**TRUCKS**
**FOR EVERY PURPOSE**
ONE TON TO FORTY-FIVE TONS

**Performance Counts**

fuel oil & oil heat

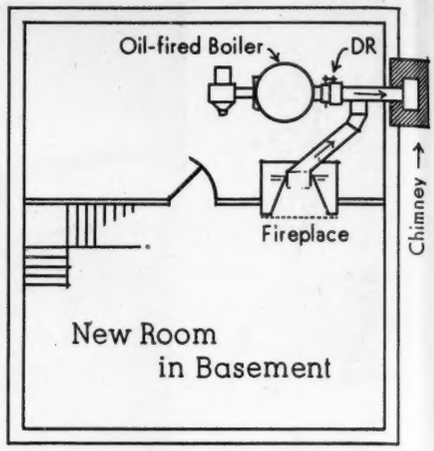
three times a year; for each oiling, about ten drops of the proper electric motor oil for each bearing is sufficient. Count the drops of oil you give each bearing. Don't insert the spout of an oil can into an oil cup, out of sight, and click-click the bottom of the oil can until your fingers get tired.

◈

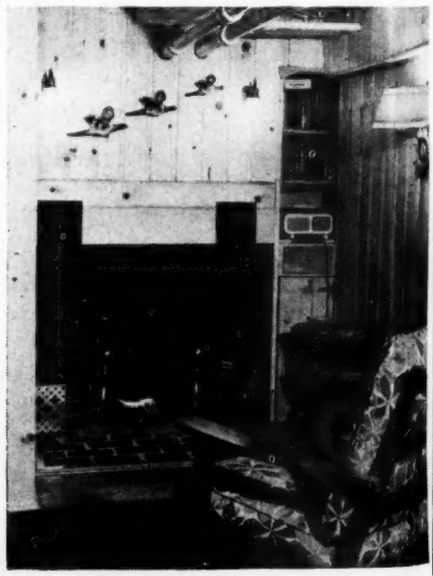
## Fireplace Engineering

This home owner's ambition to have an oilburner was linked inseparably to his determination to have a beautiful finished room in the basement—fitted with a fireplace. In fact, when he bought the burner, he already had on hand a steel chassis for the fireplace, the type which circulates air through steel passages heated by the fire, and sends it out warm through grills, to heat the room.

As the accompanying diagram shows, there was only one chimney, and it was located behind the heating boiler. To erect an additional chimney, just for the open fireplace in the basement, seemed too far-fetched.



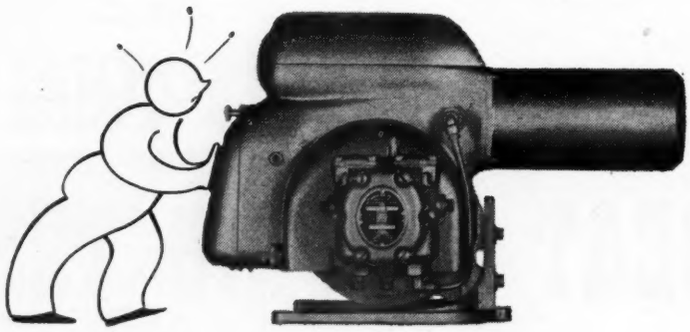

The application of combustion engineering and draft knowledge to the fireplace problem provided an answer. The steel fireplace chassis was placed with its back to the heating boiler and on the line where the owner intended to build the inside partition which would form one wall of the new, finished room in the basement. A smokepipe was hooked to the fireplace chassis, of size which would give the same area as the area of the flue used by the heating boiler. Behind the draft regulator (labelled DR in the diagram, and which is the type which closes a butterfly valve inside the smokepipe to



reduce the draft on the boiler), a tee was installed in the smokepipe serving the heating boiler. The fireplace smokepipe was connected to this tee. A good upwards slope was easily arranged for the smokepipe which served the open fireplace. The photograph shows how the front of the fireplace looked after the installation was completed.

Fireplace draft is excellent. Told at first to burn only charcoal and similar


# We Can't HURRY Hercos



**Herco oil burners have always been famous for their dependable, oil-thrifty performance—and this reputation has made them profitable, good-will builders for dealers all over the country.**

**It is only natural, therefore, that the demand for them is ever-increasing.**

**Unfortunately, for both you and for us, it is not yet possible to produce these quality burners in the quantity necessary to meet the demand.**

**Please bear with us a little longer, and remember—when your Hercos *are* delivered, you'll be getting precision-made, top-quality burners—the kind that have built the Herco reputation.**

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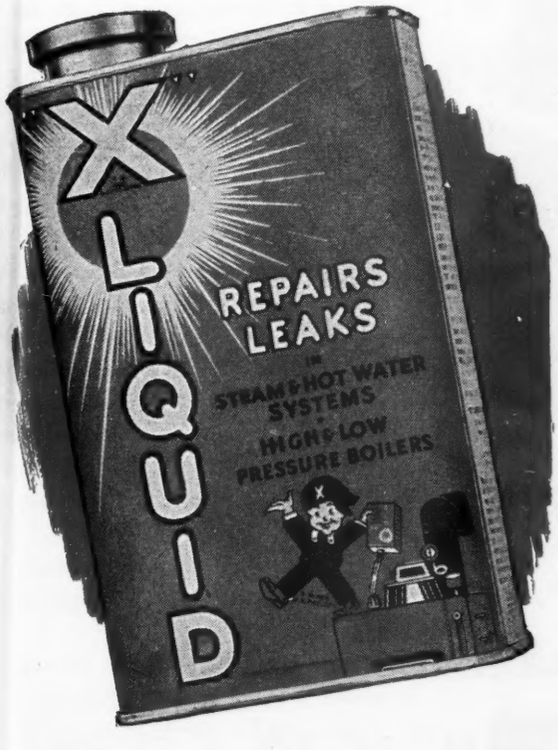


You've got a big responsibility to your customers today—to keep present heating plants in service and make fuel oil produce maximum heat. A clean, rustproof and leakproof system is the answer. "X" has the heating system service products to enable you to do this important job . . . "X" FLUSH & RUSTOFF to really clean the system and keep it clean . . . "X" LIQUID to repair leaks and continue old boilers in good service. "X" LIQUID circulates with the water to the leak in high and low pressure boilers and makes a swift, sound repair. It actually seals from the OUTSIDE! . . . not just a quick plug or temporary seal, but a sound, rugged repair that puts a boiler back into lasting, steady service. "X" contains no flaxseed meal, metal shavings, soap or liquid water glass to impede circulation . . . "X" is a colloid and it has been your Industry's leading stopleak for 30 years.

*the Famous* **"X"** *Line*

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**"X" PIPECUT OIL**
**"X" PIPEJOIN**

*Write for the facts* . . . **"X" LABORATORIES, INC., 25 WEST 45th ST., NEW YORK**

easy-to-burn, clean-burning fireplace fuel, the owner now laughs at this advice. He says he "burns anything" in the fireplace, and that it could not draw better. During the heating season, the fireplace is used practically daily because it is the only source of heat for the new room in the basement, and this is the most popular room in the house. The room is well heated on relatively small amounts of wood.

The oilburner, incidentally, operates just as well as though its smokepipe were not serving a fireplace.

## Cutting Oil Bills

ATTENTION TO the smallest details is necessary to arrive at truly minimum oil consumption, and to date few burners have received such attention. That's why experts find it possible to cut the oil bills of typical homes by 15% to 40%. For example, the firebox draft must be set low, because .06" is too high if .02" does not give signs of insufficient draft. Not one slot in the atomizing nozzle must be clogged, even though the nozzle has three or four slots. A firing door must be adjusted or repaired if it fails to close by 1/8". Certain flue passages must be baffled to cut stack temperatures by 200° to 400°. The firebox must be replaced if the side walls are too low, the wrong material was used in building it, or the length is excessive. Those are just a few of the 101 details that must receive skillful technical attention if the fuel consumption of typical installations is to be reduced to rockbottom.

Here's an important item which many service men are not giving suitable attention. Most room thermostats have adjustments for altering the sensitivity or differential; on installations where the room thermostat adjustment governs the "on" time of the oil burner, attention is needed to make sure that the oil burner "on" time is not too short for fuel economy.

Intermittent firing is, of course, less efficient than continuous firing. This is realized fully after a study of real efficiency tests, which give true measurements of the heat in the oil burned and the heat output of the boilers or furnaces being tested. One series of evaporation tests, of a cast-iron steam boiler, evaluated the penalties of the "off" periods as follows: Continuous operation of the oil burner produced 80% efficiency with the firebox built of heavy-weight firebrick backed up by insulating brick, and practically identical efficiency with the firebox built entirely of light-weight insulating firebrick. Having the burner run for 15 minutes, then stay idle for 15 minutes, gave 70% efficiency with the heavy firebrick, and 76% efficiency with the firebox of light-weight firebrick. Having the burner "on" for 15 minutes and "off" for 135 minutes gave 40% efficiency with the firebox of heavy firebrick, and 52% efficiency with the firebox built of light-weight firebrick. A dry-base boiler was used for the tests. "Continuous operation" means 48 hours of steady burner operation, to arrive at thermal equilibrium, preceding the 24-hour evaporation test. The firebox used for the tests was of usual design for the heavy firebrick, but of special design for the light-weight brick.

What does this mean to the service man who is digging in the bottom of his tool kit to find a nozzle to install in the burner which fires Mrs. Murphy's steam boiler? How does it tie in to the problem of adjusting the thermostat properly?


New! L-R Type D-X FLEXIBLE COUPLINGS

for Oil Burners, Air Conditioning, Fans, Pumps, etc.

*Made entirely of tough synthetic rubber. Secure fitting and grip. No metal to metal contact. No looseness. No rattle. Easiest handling.*

**Now the new L-R "D-X" brings you the simplest, most secure flexible coupling yet made for oil burners. Has tough synthetic rubber body without ribs to loosen or rattle. Slides into jaws on fan hub in a jiffy, grips and *holds*. It can be easily and quickly assembled, even in the dark and in close quarters.**

**Made in sizes to fit all applications. Equip your product, or service your customers with this easily installed L-R "D-X" for better, quieter, longer performance—greater satisfaction. Write for facts and engineering data.**

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**1** Wide protective collar, strengthens coupling. Makes it easier and quicker to install—in dark or close quarters.

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**3** Molded synthetic rubber body—noiseless, flexible.

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***This collection of articles from Fueloil Journal, Air Conditioning and Oil Heat and from Fueloil & Oil Heat covers trouble shooting, field repair, and efficiency testing to save oil. It is a valuable book for individual study or as a supplementary text for service schools. For all dealers, service and installation men.***

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**Controls:** Principles of Electric Relays—Motor-Starting Relays—Electrical Test Benches
**Nozzles:** Handling Nozzle Trouble—Bench Tests for Nozzles
**Pumps:** Handling Oil Pumping Trouble—Service on 2-Stage Pumps—Service on Automatic Valves—Service on Pump Glands
**Baffles:** Proper Baffles Save Oil—More Heat per Gallon
**Efficiency:** What $CO_2$ Means—Brass Tacks of Combustion Testing—What? No Instruments?—Know $CO_2$ from IOU—Five Ways to Figure GPH Rates—Effects of Firing Rate on Cost
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It means the service man does well to install the nozzle of the lowest capacity rating that will heat the house properly on the coldest mornings. If he winds up with the burner running a sum-total of only eight hours out of 24 on a zero day, of course he will raise the stack loss sky-high; during the eight hours the boiler is working out of the 24, it must make up for the 16 it laid idle. In eight hours, the boiler must equal the 24-hour heat loss.

Consider this aspect of the problem. If 24 gallons of oil were to be burned on a zero day to heat a given house, higher efficiency and more heat for the house would come of firing 1.0 gph steadily throughout the 24 hours in a particular boiler which gives 600° stack temperature, than would come of firing 2.0 gph in twice the size boiler (stack temperature also 600°) and having the burner "on" for 15 minutes, then "off" for 15 minutes. Continuous firing, even for the coldest day of the heating season, is not practical for burners of the on-off type which give flames of fixed size. But it is practical to adjust for the lowest gph rates that will give good heat, and to take steps to avoid needless starting and stopping.

The relationship of these principles to an ordinary oil burner installation shows up well in the following case history. A burner installed about six years ago, and judged to be typical, was found to run about 25 minutes each time the room thermostat started it. For experimental purposes, it was fitted with a special control system which would give five-minute "on" periods. This system ran the burner exactly five minutes at a time, as many times a day as necessary to keep the temperature 72° where the room thermostat was located. As a result of switching from 25-minute to five-minute "on" periods, the oil consumption increased a trifle more than 25%. Extensive improvements then were made in an effort to adapt the burner to the five-minute "on" periods. These did lower the oil consumption somewhat (it still ran 12% to 18% above the oil consumption experienced with the original 25-minute "on" periods), but they failed to produce combustion quality comparable to that which could be obtained by using the longer "on" periods. The combustion with the short "on" periods was inferior even during one part of the field study when the burner was switched from No. 2 oil to No. 1 oil.

*John E. Nesbitt* has resumed his duties as a New England district representative for Oil-O-Matic, according to an announcement by W. A. *Matheson*, vice president in charge of the Williams Oil-O-Matic Division, Eureka Vacuum Cleaner Company. Since July 1942, Mr. Nesbitt has served with the Army Air Force and held the rank of major at the time of his discharge. Mr. Nesbitt's oil heating experience dates back to 1923 when he joined the Socony Burner Corporation.

*J. F. McIndoe* has been appointed manager of the Combustion Equipment Division of the Enterprise Engine & Foundry Co., San Francisco. Mr. McIndoe served as Regional Priorities Manager with the War Production Board in San Francisco throughout the war, and prior to the outbreak of hostilities was associated with the American Radiator and Standard Sanitary Corporation in the Pacific Northwest. He is a past president of the Oregon Chapter of the American Society of Heating and Ventilating Engineers.

*Lt. Col. H. P. Valentine* has been named manager of Mack dealer sales and operations at New York. Colonel Valentine was in the War Department where he was chief of the Transport and Automotive Branch, production Division Headquarters, Army Service Forces. Prior to his war service, he was with the Chrysler Corp. for 11 years in key executive positions. He began his career in the automotive industry with the Packard Motor Car Company as an apprentice.

*Miss Beatrice Hickstein* has been made superintendent of production for Newark

TO ADJUST: Simply unscrew cap and lift off acitate tubing.
TO SET: Pull up indicating rod and thumb set red fibre knob to accurate reading.
FULL
250
200
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The Model C Improved Mel Gauge illustrated represents the highest quality in design and workmanship at a new low competitive price made possible only through quantity production, yet is considered by many to be the finest gauge that money can buy due to its patented adjustable features. Compare an actual example of this remarkable new gauge with an ordinary gauge before determining this year's requirements. See how easy it is to adjust at all times to accurate readings of any amount of tank contents and notice the exclusive feature of the dial which can be adjusted to face in any direction. Compare the added benefits to be derived from this exclusive feature. Compare its precision in workmanship—its burnished cast aluminum fittings with carefully machined parts to assure "vacuum sealed" perfect seating and eliminate any possible chance of oil entering the gauge. These comparisons should prove beyond a doubt the advisability of specifying Mel adjustable Gauges for every fuel oil tank installation. If more convincing proof is needed, write for our detailed folder.
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Manufacturers' Agents Write for Information
There are still many valuable territories open for distribution of Mel adjustable fuel oil Gauges. Prices and specifications will be mailed at your request.

Boiler Regulator Co., Bloomfield, N. J. Miss Hiskstein, a graduate engineer, served for several years in the Engineering-Manufacturing Department of Western Electric Co., Kearny, N. J.

*Charles L. Cronin,* formerly of Cronin Supply Co., Cambridge, Mass., has established a distributing business at Arlington, Mass., handling oilheating equipment and supplies.

*Ivan C. Sutherland,* Sprague, Breed, Stevens & Newhall, Lynn, Mass., has been elected head of the distributors' organization of the Stokol Division of Chrysler Airtemp. The company is one of the larger fuel distributors north of Boston, and sells oilburners and stokers. Mr. Sutherland is a director of Oil Heat Institute of New England.

*William W. Frank* has been made manager of the Dealer Department for Edward R. Sabin Co., Philadelphia, distributor for G-E automatic heating equipment. He formerly was with Elliott-Lewis Company as wholesale manager after a career that started as a salesman.

*John A. (Al) Johnson* has returned to his prewar job as sales engineer for The Mercoid Corporation in the New England territory. During the war he was with the U. S. Army Engineer's office in Boston, working as production supervisor and expediter of materials for prime and subcontractors. His headquarters will be at 89 Chester Rd., Belmont, Mass.

*Leonard C. Bastian,* who was Staff Standardization Engineer of the Air Conditioning and Refrigerating Machinery Association, Washington, D. C., has rejoined ACRMA following his release from active duty as a Lieutenant Commander in the Civil Engineer Corps of the Navy.

*Ralph E. Oursler* and *William Flanagan* recently have been appointed district representatives for the Evanair Division

Flanagan

Oursler

of Evans Products Co., Detroit. Mr. Oursler will represent the company throughout the Middle West, after his transfer from the company's Sky Products Division. Mr. Flanagan, formerly with Rockwood Sprinkler Co., is Eastern District Representative.

*James A. Cain* has been named manager of the newly formed divisional office of A. M. Byers Co., at Atlanta, Ga.

*E. L. Malm* has been named sales promotion manager of Bell & Gossett Co., Morton Grove, Ill., manufacturer of hot water specialties.

*Fred L. Williams,* Hartford, Conn., has joined the factory field organization of H. A. Thrush & Co., Peru, Ind. He will cover most of Connecticut, Western


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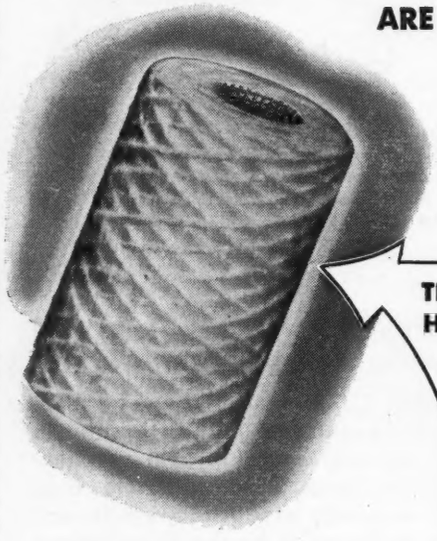

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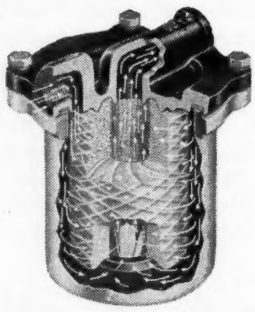

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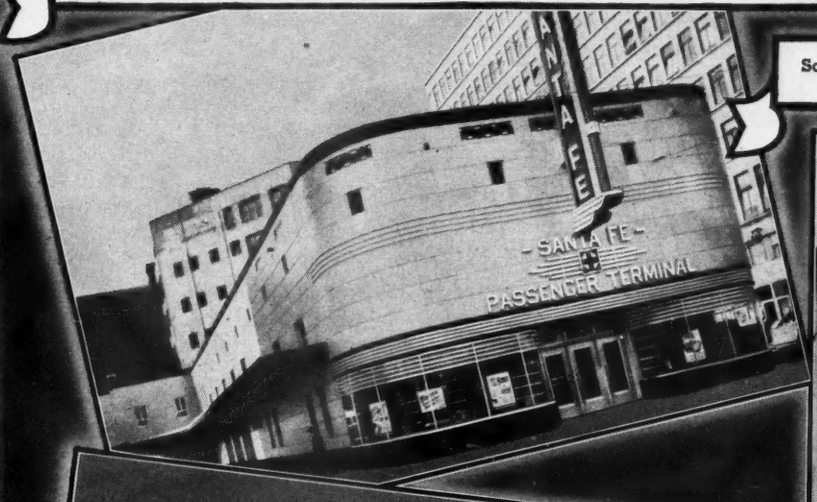
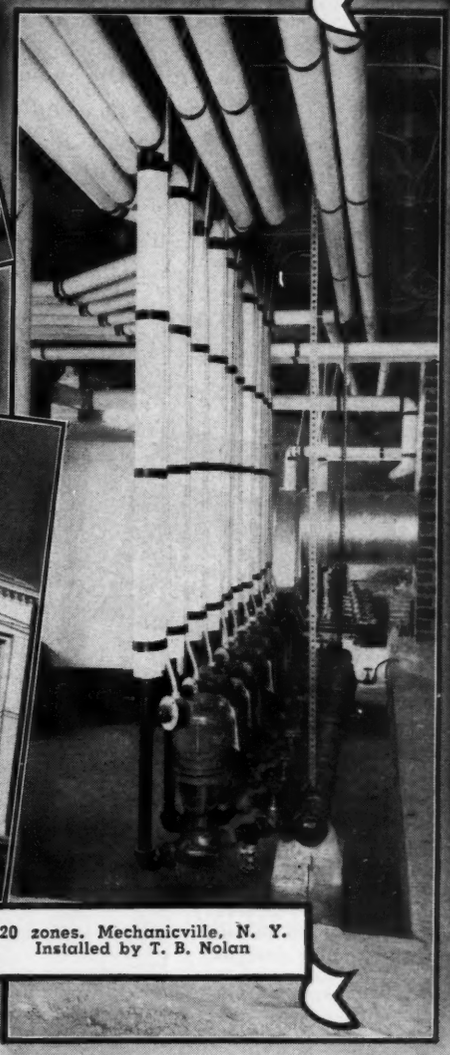


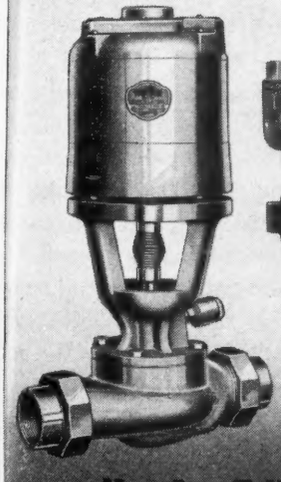

Santa Fe Passenger Terminal, San Francisco, California

Gladding McBean & Co., San Francisco. Installed by Higgins and Krause

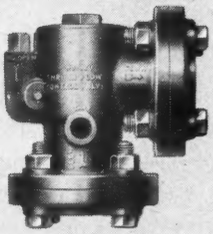


20 zones. Mechanicville, N. Y. Installed by T. B. Nolan

# THRUSH ZONED *Hot Water Heat*



*Thrush Flow Control Valve*



*Thrush Water Circulator*

**ALL over the nation Thrush Zone Control is saving heating dollars and conserving fuel. The illustrations show two typical office buildings heated by Thrush Zoned Forced Circulating Hot Water Heat, both of which have been giving satisfactory service for more than seven years, and an apartment house installation with twenty zones. The Dundalk Housing Development in Dundalk, Maryland, is using 68 zones to heat 8 groups of buildings. Schools, churches, hospitals, estates, industrial plants are all good prospects for you. They'll be glad to listen to a "money-saving, fuel-conserving" story these days. We'll help you make recommendations. See your Wholesaler today or write Department C-12.**

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Massachusetts, and all of Vermont on Thrush heating and hot water specialties.

*Mel Robb* has been named sales manager for Evanaire space heaters manufactured by Evans Products Co., Detroit, according to *A. W. Shields*, general sales manager for the space and water heater division. Mr. Robb was sales manager for Evanaire before Pearl Harbor, after which he became assistant to *R. B. Evans*, vice-president. He will handle Evans field personnel, and work with Westinghouse Electric and Supply Company, Evans distributor, and with independent dealers.

*John P. Collier*, for 38 years with American Radiator & Standard Sanitary and predecessor companies, died suddenly at his Chicago home, November 21. He was 63 years old. He had been active in company sales offices, mostly in the Middle West, since March 1907.

*George R. Wallace*, former Master Sergeant in the Army, has joined the New York sales staff of the Neptune Meter Company. He is a sales engineer whose services will be available to users in Manhattan, Long Island and Northern New Jersey. Sgt. Wallace served three years in the Army most of which time was spent in North Africa and Italy.

## OHI Issues Service Text

OIL HEAT INSTITUTE is distributing its long-awaited Basic Service Text for pressure type oilburners, and has produced an excellent treatise on the general subject of domestic oilburner installation. It is generously illustrated and complete.

This book is intended as a text for service schools and offers a series of quiz questions at the end of each chapter to emphasize the chief points an installation man should remember.

Controversial points have been avoided in writing the text, and the suggestion is made that manufacturers' recommendations be followed as to detail on which there is a difference of opinion.

Besides a thorough discussion of the various parts of the oilburning system and its controls, the book covers heating systems, loads, water heating and allied subjects. Of probably the most interest to the serviceman is the last chapter on Service Problems and Service Procedure. Though every chapter contains service hints by implication, it is in this chapter that the book gets down to specific troubles and their suggested cures.

The book is devoted entirely to the convential type of high-pressure atomizing gun burner. Except for the discussion of general heating problems or control wiring diagrams, none of it applies to specific service problems that may arise with other types of domestic oilburning equipment. Other texts may follow on the low pressure and rotary burners if there is sufficient need for them.

Basic Service Text, Pressure Type Burners, by G. T. Kaufman, technical secretary, Oil-Heat Institute, New York, 216 pages. Price to members $2.00.

*Cut down*
**YOUR CALLS FOR EMERGENCY SERVICE!**

**with the**

# *Klemm*

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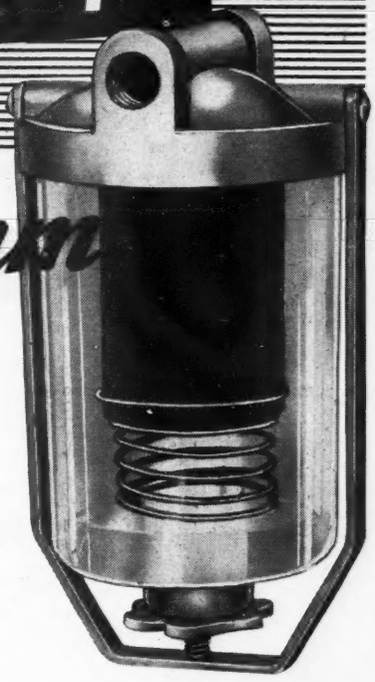

- **Visible CHEMISTONE Element**
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**Oil burners operate more efficiently when the major causes of stoppages are eliminated . . . Klemm Fuel Oil Filters remove dirt, sediment, water and other foreign matter . . . This assures a steady flow of oil to the burners . . . Every fuel oil customer needs this device . . . You make two profits on every sale . . . a liberal margin and a sharp reduction in avoidable calls for emergency repair service.**

***Look at these advantages:***

1. **Dependable Performance** . . . Elimination of foreign matter assures smooth flow of oil.
2. **Wide Range of Use** . . . A Klemm unit operates efficiently with Nos. 1, 2 or 3 grade oil.
3. **Used With Any Burner** . . . Same element functions perfectly with all types of burners.
4. **Flow Capacity** . . . 50 gallons or more per hour at one-foot gravity feed.
5. **Oil Tight** . . . Extra wide gaskets make a tight seal for bowl and head casting.
6. **Easy to Install** . . . Can be readily installed on all standard models at burner or tank.
7. **Simple to Service** . . . Filter element is easily removed for cleaning. Use over and over.
8. **Full Visibility** . . . Inspection requires no removal of parts. Filter element is visible.

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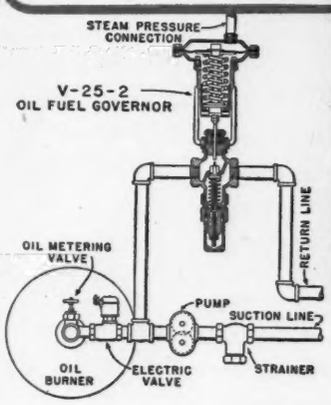
# *Dependable*

## FUEL OIL GOVERNOR V-25-2 ➡




## Return Line Type For Rotary Fuel Oil Burners

***Now*** this Oil Fuel Governor will regulate oil flow between a high and low pressure according to the demands of the steam boiler whose pressure is applied to the diaphragm assembly of the governor. All other relief valves can be eliminated as the return line fuel governor provides all the relief valve action required for the oil burner.

Ample range is provided on both high and low fires—the low fire can be adjusted to lower than 10% of any maximum pressure, while the high fire can be brought down to as low as within 100% over the low fire adjustment if necessary.

This governor will modulate between the high and low oil pressure setting according to the position of the main diaphragm and the governor stem, which is controlled by the steam boiler pressure.

For further information, contact your nearest General Controls factory branch or distributor, or write for Catalog 52-B.

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# New Products

## Web Heavy Oil Burner

HEATECON CHEMICAL RESEARCH Corp., Toledo 2, Ohio, has announced the Web oilburner "engineered to burn heavy oils without pre-heating." The unit consists of an emulsifying pump set with direct motor drive and low pressure nozzle. Oil and about 4% of the air required for combustion are emulsified by vacuum action in the pump, and sent by low pressure to the nozzle.

The unit is designed for either No. 5 or No. 6 fueloil, and is claimed to be capable of producing as high as 14.5% $CO_2$.

Heatecon also produces a fueloil sludge treatment and a boiler water treatment.

## Airtron Flexible Duct

ARROWHEAD RUBBER Co., Los Angeles, has announced a glass fabric duct for handling hot or cold air. This round duct is made in tubes of 1 to 6 ins. in diameter, and is fabricated from glass cloth and rubber. It was developed to carry heated air in combat aircraft and is unaffected by air, water, light, gasoline or oil.

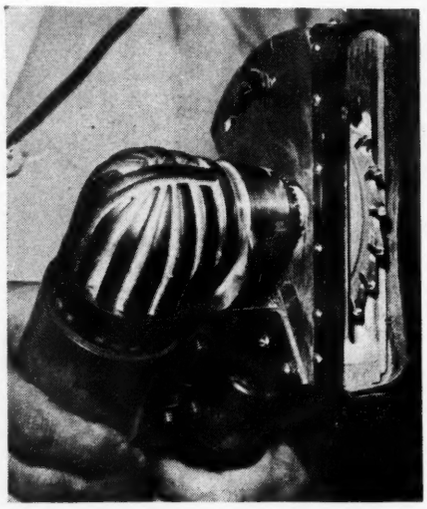
Known as "Airtron," it withstands temperatures from —60° to 300°F., and will stand more than 50 lbs. per sq. in. internal pressure at all temperatures. Resistance to fatigue in the presence of vibration makes the material suited to various industrial applications.

## Pressure-Controlled Switch

MU-SWITCH Corp., Canton, Mass., has developed a pressure-controlled switch to fill the need for an electrical control initiated by changes in fluid pressure. It provides a compact means of regulating or indicating fluid pressures, or for controlling electrical circuits whose operation is to be co-ordinated with changes in pressure. The pressure-sensitive portion of the switch assembly consists of a metal bellows soldered into a brass tube which is securely attached to the metal housing that contains the electric circuit element. The upper end of the pressure chamber has a standard half-inch pipe thread for attachment to the pressure line. This unit can be furnished for operation with a differential of 5 to 15 lbs. at nominal ratings of from 10 lbs. to 120 lbs. per square inch. The pressure chamber is made of a corrosion and heat-resisting material, and the unit can be safely operated at temperatures up to 300°F.

## M-H Installation Tool

MINNEAPOLIS-HONEYWELL has disclosed a new installation tool to simplify control installation in apartment buildings. This tool cuts a clean channel in hard plaster

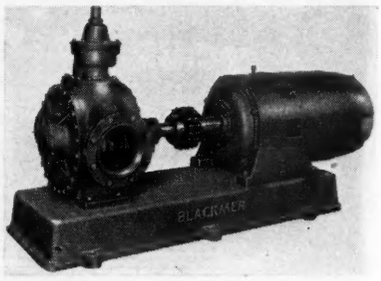


walls in which wire and tubing can be run. A vacuum attachment "inhales" the dust of the saw as the material is cut.

After installation the groove is filled with a plastic filler and masking tape so that the finished job is unnoticeable. The tool is used in the installation of individual controls to regulate heat in separate apartments. Two hundred of such installations have been made in apartment houses in sixteen cities, the company reports.

## Blackmer Heavy Oil Pump

BLACKMER PUMP Co., Grand Rapids, Mich., has announced a special rotary pumping unit for handling Bunker C fueloil and similar liquids. The power unit is a gearhead 50 hp motor with a pump shaft speed of 150 rpm. The pump has a capacity of 500 gpm at a pressure of 125 lbs. per sq. in.

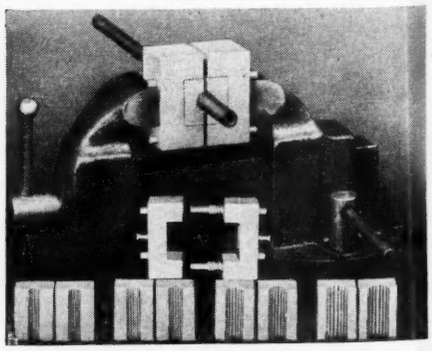



The pump is bronze-fitted and operates on the "bucket design" (swinging vane) principle. It is self-adjusting for wear, so that there is no loss of capacity during the life of the "buckets." When worn to the critical point the buckets may be replaced by simply removing the head of the pump, pulling out the worn buckets and inserting new ones. No adjustments or "wearing in" are necessary.

## Holds Small Pipe

NIP-GRIP, a pipe gripping device, has been designed to hold small pipe in any vise without crushing or marring the surface or threads. Servicemen have found 1/8 to 1/2 in. thin walled pipe is hard to hold securely.

The device consists of two light alloy retainer blocks in which hardened steel inserts are slipped to hold various pipe sizes. Inserts of 1/8, 1/4, 3/8 and 1/2 in. pipe size are furnished. Springs spread the



blocks when the vise is opened. Nip-Grip is made by J. A. Campbell Co., Long Beach 7, Calif.

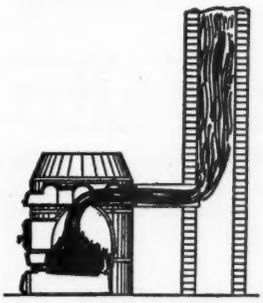
## Coroaire Forced Circulator

COROAIRE HEATER Corp., Cleveland,

"Required Reading"

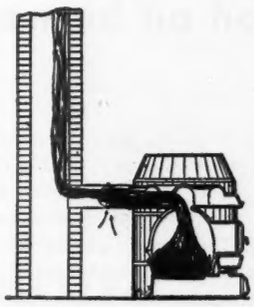
FOR EVERY MAN INTERESTED IN HEATING EQUIPMENT PERFORMANCE:

# Why Install a Draft Control?

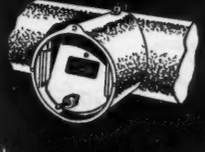


**The diagram at left illustrates what takes place in the average heating plant not equipped with a FIELD DRAFT CONTROL. When the chimney draft is greater than necessary for proper draft and combustion, heat is drawn up through the chimney and wasted. Fuel wastes run as high as 25%!**

**At the right we picture for you the change effected when a FIELD DRAFT CONTROL is installed. The barometric pressure opens the gate, maintaining the proper draft to carry smoke up the chimney, but withdrawing excess draft through the opening created by pressure of the air upon the gate.**



SAVE FUEL WITH A FIELD DRAFT CONTROL | BUY U. S. WAR BONDS



field

CONTROL DIVISION
of H. D. Conkey & Company — Mendota, Illinois



Right before your eyes!

$CO_2$

# Combustion Check-up

DRAFT GAUGE

STACK THERMOMETER

FIRE EFFICIENCY FINDER

The FYRITE Combustion Test Set gives you everything you need to detect furnace conditions that waste fuel. The FYRITE $CO_2$ Indicator quickly shows whether the fuel receives the proper amount of air. The Stack Thermometer test shows how well the furnace absorbs the heat of the fuel burned. The unique Fire Efficiency Finder correlates $CO_2$ and stack temperature readings to show at a glance loss due to heat carried away in the flue gases. The DRAFT-RITE Gauge is indispensable for properly adjusting the draft.

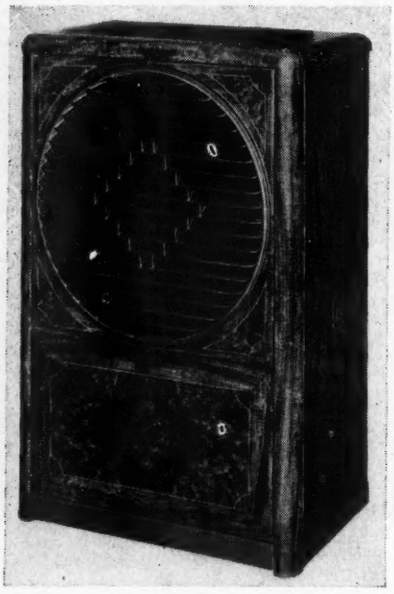
These instruments are designed especially for the heating man's service kit. They are easy to operate, sturdy, durable, lastingly accurate. Use them now—to point the way to necessary repairs and adjustments that secure efficient fuel utilization... and to build an ever-widening reputation for reliable, expert service.

HEATING SERVICE DIVISION

BACHARACH INDUSTRIAL INSTRUMENT CO.

7000 BENNETT STREET • PITTSBURGH 8, PA.

Ohio, has announced a new forced air circulating heater for either oil or gas firing. The unit is supplied with filter and humidifier.



Air is moved over the heating surfaces by a propeller-type fan which forces it through 46 tubes in the cast-iron Venturi heat exchanger. A patented grille can be adjusted to direct heated air to the spot where it is wanted.

## Electrol Mfg. Gets Oilburner Rights

ELECTROL BURNER MFG. Co., Rutherford, N. J., has acquired the manufacturing and sales rights for the Electrol line of domestic oilburners, and will continue to market that familiar line of equipment. Heading the new concern is Robert F. Andler, who has been associated with the company since 1926, and who has been supplying Electrol dealers with burners and parts during the war period as Andler Engineering Company.

R. F. Andler

"Electrol dealers, old and new, will be interested to know that we shall supply them with the complete Electrol line," Mr. Andler says. "We have taken over all Electrol patterns, dies, patents and production equipment and will continue the business as it used to be."

Mr. Andler started with the company as a draftsman in St. Louis. He moved east with the company when manufacturing was transferred to the New York area in 1933, and became chief engineer in 1937. When Electrol, Inc., went 100% into war production, he organized Andler Engineering Company and supplied such burners and repair parts as were possible to make under wartime manufacturing limitations.

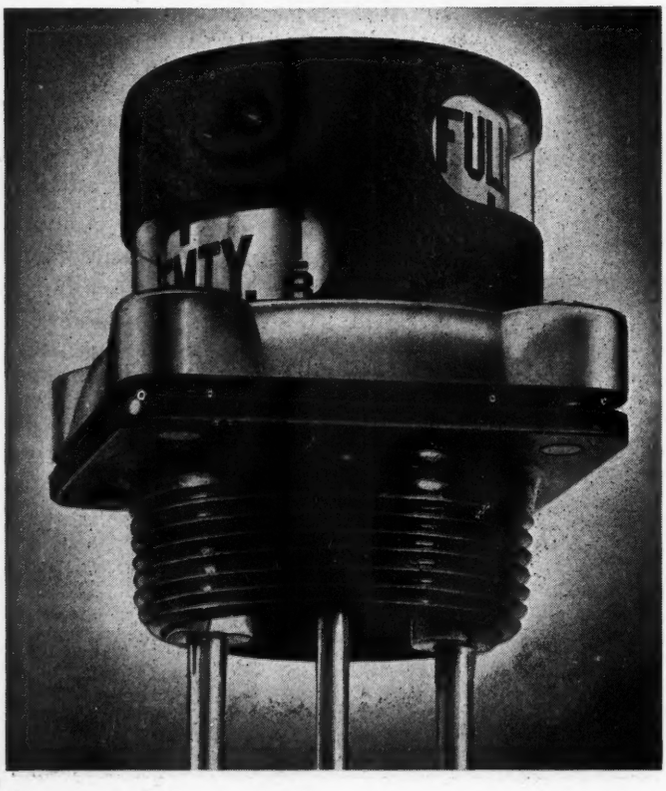
◈

*Fred C. Conkey*, 74, managing director of Fuel Oil Supply, Elizabeth, N. J., died at his home there Nov. 10. A specialist in heating-fuel problems, Mr. Conkey was secretary of the Central New Jersey Coal Exchange and vice president of N. J. Fuel Distributors.

*Russell M. Cook* has been elected vice-president in charge of sales for the Thatcher Furnace Co., Garwood, N. J. He was connected with the company before joining the Army Air Corps.

*John G. Neukom*, a principal in the firm of McKinsey & Co., has been transfered to the Pacific Coast office at San Francisco. He formerly was in charge of fuel rationing for OPA in Washington.


# NO COLD *HOMES*...
# NO COLD *BUILDINGS* ...with this *two-way check* on oil burner storage tanks



Rochester's double dial Universal Gauges for oil burner storage tanks give every user a double check on oil supply. If the owner fails to check, the deliveryman can . . . and vice versa. Widely spaced, easy to read graduations enable you to read the dial instantly. There is no excuse for a cold home or a cold building with this kind of convenience.

Sealed against tank fumes, the dials cannot fog or discolor. That's another factor which helps you win satisfied customers.

Rochester Universal Gauges are magnetically actuated, leakproof and Underwriters listed for volatile liquids. They are easily installed and on any basis of comparison, give your customers what they want. Over 550 jobbers throughout the country stock Rochester Gauges. Name of nearest jobber sent on request.

**ROCHESTER MANUFACTURING CO., INC.**
**8 Rockwood St. Rochester 10, N. Y.**

Rochester Guaranteed Accuracy
**ENGINEERED INSTRUMENTS**
LIQUID LEVEL, TEMPERATURE AND PRESSURE GAUGES

*Best Wishes*
*of the Season*
*Extended to*
*Our Friends*
*of the Trade*

## Hago Products

*592 Hawthorne Ave. Newark 8, N. J.*

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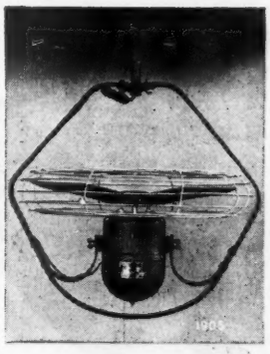
# NO MORE COLD FLOORS

THE *Reco*
**HEAT**
CIRCULATOR
**FAN**



## PROVIDES UNIFORM HEAT THROUGHOUT A ROOM

**This revolutionary new fan provides comfortable heat for "hard-to-heat" rooms, which can be kept comfortable in no other way.**

**It is simple in operation, but magic in the results it produces.**

**It blows upwards, the air traveling along the ceiling and down the walls, carrying the super-hot and moist air in the room with it, causing uniform temperature and humidity throughout the room, without draft.**

**It provides heating comfort for rooms with overhead radiators or ducts; for rooms which are subject to strong outside breezes; and rooms with high ceilings. It prevents wall streaking and air stratification.**

***Please write for Special Distributors' Proposition***

*Established 1900*

**REYNOLDS ELECTRIC COMPANY**

**2687 W. CONGRESS STREET**
**CHICAGO 12, ILLINOIS**

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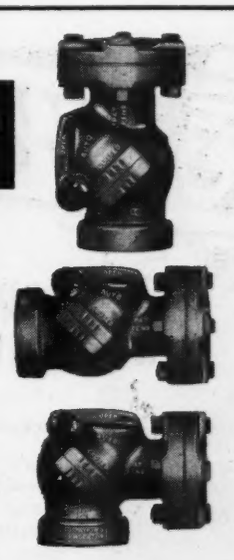
# NEW TRIPLEX PRODUCTS give further assurance of HOT WATER AT ITS BEST!

## NEW VERTICAL CIRCULATOR

—of modern streamline design. Precision gauge construction for smooth, dependable operation. Close fit of balanced inlet impeller in body bore assures unusually high pumping efficiency. Spring-mounted vertical sleeve bearing motor with automatic reset overload relay. Electrical knockout box prevents noises. All parts interchangeable with those of similar model and number. In 1″, 1¼″, 1½″, and 2″ pipe sizes (horizontal model for 2½″ and 3″ sizes).

## NEW UNIVERSAL FLOW CONTROL VALVES



*One* stock meets all needs. Here's why: Valve seat and cover casting are divided at 45° angle—and assembled in line for use on horizontal or vertical mains, or at 90° for angle pattern installation. Four socket-head cap screws (easily removed for angle change) seal gasketed surfaces. Dependable valve mechanism (brass seat and closure cover) attached to external control knob. Complete units are of precision gauge construction and styled for modern eye appeal. In 1″, 1¼″, 1½″, 2″, and 3″ iron pipe sizes.

With these outstanding new items of advanced design and construction added to its dependable standard line, Triplex offers precision-made equipment necessary to meet modern demands—and gives further assurance of hot water heating at its best! Write today for facts and prices.

DISTRIBUTED THROUGH RECOGNIZED WHOLESALERS

*Triplex* HEATING SPECIALTY CO.
**PERU, INDIANA**

# Reader's Problems

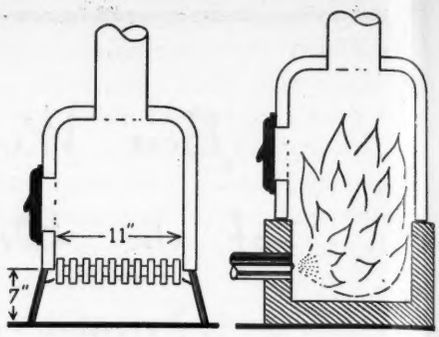
*Q. Although we'd rather not do this, we may have to install a pressure burner in a pot-stove water heater with a 7" base and 11" grate, connected to a 100-gallon hot water tank in a three-family apartment house. Our sketch is attached to show the water heater has absolutely no flue passages. We can't understand it, but fired by coal this heater provides ample hot water for this house. We know that when set for the lowest firing rate our burner works all right with a firebox 11" in diameter. Please outline what to do to fire this stove by a pressure burner, and what to expect. Will it help to insulate the hot water tank, which now is bare?*

K.W.D., *Baltimore.*

A. If there's no way out of installing a pressure burner under this highly unsuitable water heater, use the ideas shown in the accompanying sketch. Raise the heater so that the bottom of its water leg is 18" to 20" from the basement floor, and under it build a firebox 11" in diameter. Discard the old ashpit, for the firebox supports the heater. The firebox should be encased in sheet-metal to make it air-tight. Insulating concrete should be poured between the sheet-metal and the refractory material which forms the firebox.

As to what you can expect of such an installation: We won't say certainly that you will be sorry you made the installation, but it is plain that, having no flues and being undersized anyway, this heater would do well to absorb one-half the heat given by the smallest flame a pressure burner can put under it. You can expect a smokepipe temperature well over 1000°, and as a result you may have trouble with the stack control.

By all means insulate the hot water tank, water heater, and hot water piping.




Pressure Burner Fires Small Water Heater

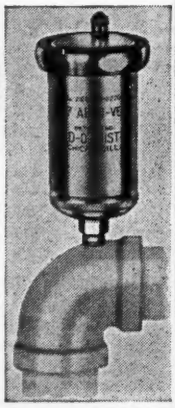
This won't help solve the firing problems, but it will save considerable oil. In addition to the usual high temperature limit control on the water heater itself, install a temperature control halfway up the side of the hot water tank, connect it in series with the boiler temperature control, and set it at about 120°. If you do these things, the oil consumption may not be entirely too high. From what you say, the occupants of the building do not use much hot water and the burner will be idle much of the time. Installation of the insulation and tank temperature control will, in any event, make for very low standby losses.

* * *

*Q. To settle an argument, will you explain if a pressure burner (a) draws oil*

And Keep It Out With

AUTO-VENT AIR ELIMINATORS



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Don't fight air pockets or traps in hot or cold circulating lines! "Get that air out of there" *and keep it out* simply by installing the No. 7 Maid-O'-Mist Automatic Air Vent. This reliable air vent has a self-closing float-controlled valve and is designed especially for circulating pipe lines, convector radiators, unit heaters, cooling manifolds, tanks, diesel engines, or any other application where air pockets or traps retard the free circulation of liquids. For pressures up to 75 lbs. Bright brass finish.

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AUTOMATIC HUMIDIFIERS FOR ALL TYPES OF HEATING SYSTEMS

DELIVERIES ??

Fig. F-80

Sorry, but prompt deliveries can only be offered on orders for just one or two nozzles for emergency needs. During the War few civilian requirements could be filled but demand continued so great that we still have a large unfilled order backlog.

Even though production is far above prewar levels, it will be some time before deliveries return to normal.

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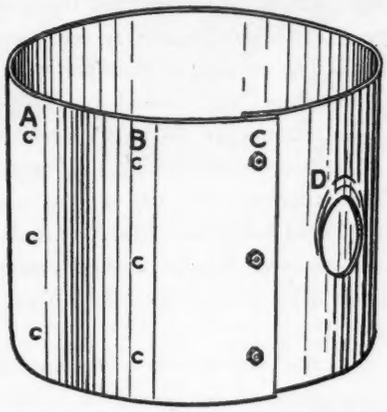
**3 in 1**




Adjustable to fire

1:00 to 1:25
1:35 to 1:65
1:75 to 2:25

**$9.00** to the trade

Made in U.S.A.—Reg. U. S. Pat. Off. No. 2341622

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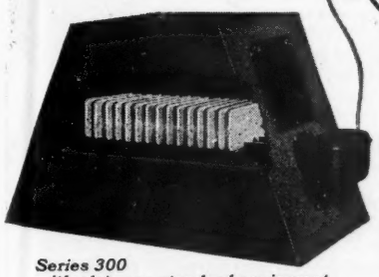
THE **ADJUSTABLE COLLAR** THAT FITS ALL BONNETS



*Series 300 with plates as standard equipment.*

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Each part is selected for long life. Tank and valve assembly—pure copper and brass. Evaporating pan—Vitreous enameled. Vapoglas 100% pure glass unaffected by chemicals and heat.

**YOU SAVE TIME** and money on your installations when you sell Skuttle Automatic Humidifiers. One look at this cross section view and you can clearly see how their adjustable collar makes it possible for you to install these Skuttle units in less time than the ordinary style of humidifiers. Available in 18″ to 30″ sizes.

Prompt shipment — 517 E. LARNED — *Skuttle Mfg. Co.* — Write for prices — DETROIT 26, MICH

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**In twenty years the Redmond Company has become an outstanding leader in the manufacturing of small fractional horsepower motors.**

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*Redmond* **COMPANY, INC.**
**OWOSSO, MICHIGAN, U. S. A.**

*Combined Redmond facilities include more than five acres of floor area and 2000 employees*

fuel oil & oil heat

*from a 275-gallon inside tank; or (b) obtains oil by gravity feed.*

D.R., *Columbia, S. C.*

A. End the argument by selecting an installation which it is agreed is representative and applying a pressure gauge, suitable for showing very low pressure, to the oil strainer compartment of a fuel unit, or to a tee installed close to the burner in the oil feed line. Find out if there is pressure on the gauge with the burner running. If there is, the burner is receiving oil by gravity. A steam boiler pressure gauge which shows ounces of pressure is suitable for such testing.

Or instead, simply loosen a plug in the fuel unit strainer housing with the burner running and find out if oil gushes out because there is head pressure on the strainer, given by gravity feed from the tank.

A pressure burner receives oil by gravity on a 275-gallon tank job with no return line, if the level of oil in the tank is above the pump on the burner, and if the feed line is clear and of ample size. It is not good practice to have it do this, but a pressure burner can, of course, lift oil from a tank located below it even when the burner has no return line.

*Q. The article "Thermostat Trouble," in the October 1945 issue shows a picture of an inexpensive room temperature recorder, and also shows charts made by a recorder which gives "on" and "off" periods of an oil burner. Please tell us the name and address of the manufacturers of these recorders.*

T.L., *Schenectady, N. Y.*

A. Practical Instrument Company, Chicago, made the temperature recorder and the "on-off" recorder. This company recently has been purchased by Bacharach Industrial Instrument Co., 7000 Bennett St., Pittsburgh, Pa.

* * *

*Q. After reading your good articles about thermostat locations, we decided to do some advanced work in that direction. The job has butterfly valves as the summer-winter hot water arrangement for the hot water heating plant. With the room thermostat in the living room, on some days wind chills the dining room and causes complaints. We decided to install a second room thermostat in the dining room to open the butterfly valves when heat is needed. Set at 70, this would keep the dining room from chilling.*

*The first thermostat is connected color-to-color to the standard control motor which opens and closes the butterfly valves. We connected the second thermostat color-to-color to the first thermostat. The trouble is that sometimes the valve motor goes around and around, keeping this up for an hour or two, although at other times it works all right. We have checked over the wiring a dozen times and found no defects in it. What can be wrong? We know the thermostats are not defective, for we tried others.*

H.E.C., *Chicago.*

A. Your wiring is wrong; the two thermostats should not be conected together color-to-color. So connected, when one calls for heat and the other calls for no-heat, the three wires of the valve motor are connected together, and the valve motor operates continuously.

The correct wiring is given in the diagram. At some point in the line between thermostat #1 and the valve motor, for example at the place between the two dotted lines, simply cut the common wire to thermostat #1, and make connections marked A, B, and D to tie in thermostat #2. With thermostat #2 in the "off"


OIL BURNER NOZZLES

Guarantee

● All DELAVAN (BALLOFFET) oil burner nozzles are GUARANTEED against defects in workmanship and materials, and further guaranteed to be clean, as shipped from our plant, and to be accurate within plus or minus 5% of rated capacity and within 5° of rated spray angle, when tested on an oil of 35 SSU at 80° F., and 100 psi.

Nozzles tested with oils of other specifications will show different results. Misuse or contamination affect spray performance. If any DELAVAN nozzle does not meet our guarantee, we are ready and willing to arrange for return, inspection and test, transportation charges prepaid. Any nozzle which is clean and does not show evidence of abuse or mishandling will be replaced free of charge, f.o.b. our plant, if our examination shows it as outside of this guarantee.

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**The articles and other items listed below have proved of great value to members of the heating, air conditioning and oilburner industries, doing all kinds of work. Many have been sold, and more are available at the prices listed. SEND FOR YOUR COPIES TODAY!**

"Eliminate Condensation from Walls & Attic" (Discussion of problems of house insulation) ..... 20c
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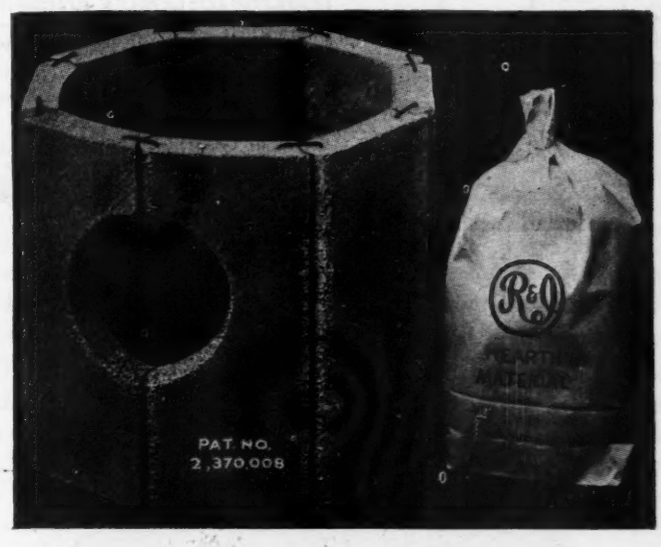


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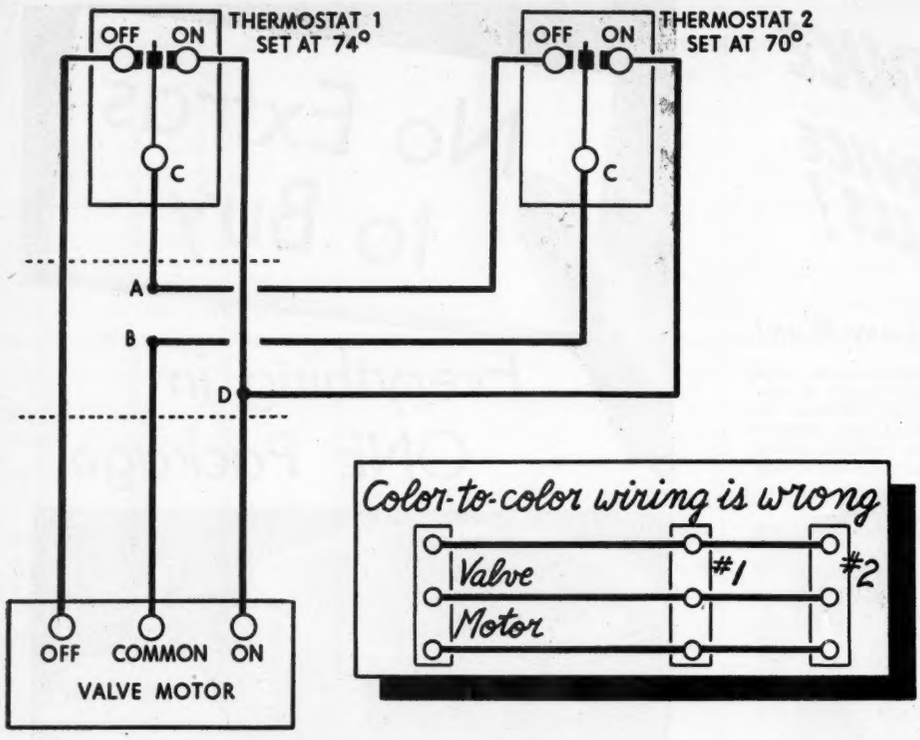
**Philadelphia 3, Pa. — Newark 2, N. J.**

# R & I Combustion Chamber




position, the common line between the valve motor and thermostat #1 is continued (A to B) and thermostat #1 controls the valves as it did originally. When thermostat #2 goes to the "on" position because the dining room chills below 70°, the circuit between A and B is broken, and B is connected to D. The valve motor then opens the valves. Thus with thermostat #2 in its "off" position, the heat is controlled by thermostat #1; but thermostat #2 opens the valves when it goes to the "on" position, even though thermostat #1 may be in the "off" position. Before you do the actual wiring on the job, make your own wiring diagram. This can be similar to the accompanying diagram, except that R, W, and R (colors of the thermostat cable wires and the terminals of the controls) are substituted by the "Off," "On," and "Common" in our diagram. To make the substitution properly, simply study a thermostat and try out the control motor by finding out which connections open the valves and which close them.

* * *

*2. How much can oil consumption be increased by soot in furnace flues?*

B.O.S., *Wichita, Kansas.*

A. In certain furnaces, a 1/8" coat of soot increases oil consumption by less than 5% because even with the soot the combustion is good and the stack temperature exceptionally low. Thick soot can raise the stack temperature greatly, and in certain furnaces can increase fuel consumption by 30%. To obtain good data from actual installations of the types which interest you, use a combustion test set to make studies with the flues sooted and clean.

**Domestic Fuel Oil Tanks**

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- Winter Air Conditioners
- Split System Units
- Boiler Burner Units
- Penngun Water Heaters

**PENN BOILER & BURNER Mfg. Corp.**

Lancaster, Pennsylvania

**PREFERRED**

**DRAFT-A-JUSTOR**

*Write for literature and trade price*

*The Original. Still the Best. Hundreds of Thousands in Use.* • Holds the draft constant in the fire box. • Scientific draft control for the smallest to the largest jobs. • Stove, domestic, and commercial sizes from 4" to 24" in diameter. • Industrial sizes from 24" x 24" to 5' x 12'.

**PREFERRED UTILITIES Mfg. Corp.**

1860 Broadway, New York 23, N. Y. Boston Office: 839 Beacon St.

Certain types of burners inevitably deposit small amounts of soot in the flues. Others can be installed and adjusted to give practically no soot, but will give small amounts when adjusted for maximum efficiency. Then again, there are highly efficient installations which give such clean burning that soot need never be cleaned from the flues of the boilers or furnaces.

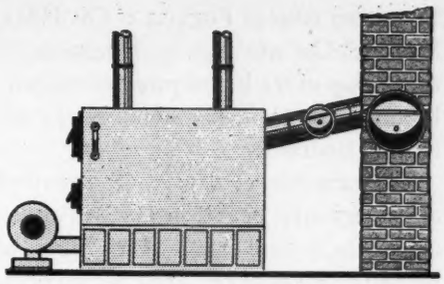
* * *

*Q. I want to know how to regulate the over-fire draft closely for a large pressure burner which I am making more efficient. Short smokepipe goes to an oversize chimney. Regular round draft regulator, same size as smokepipe, is close to chimney, and swings freely but varies the draft too much. On different days, over-fire draft readings taken after the burner runs ten minutes vary from .02" to .05", and the over-fire draft always goes higher and higher as the burner continues to run.*

C.D.S., *New Rochelle, N. Y.*

A. To control the draft closely:

1. Make tests on the installation to find out if a better draft regulator gives better control. Certain makes of draft regulators perform better than others. Install the best you can buy.



Chimney Draft Regulator for Closer Control

2. Install a second draft regulator on the chimney (see accompanying drawing). The area of this should equal the area of the flue in the oversize chimney.

3. If you haven't done this before, check on the possibilities of installing specially designed "heat rake" baffles in the flues of the boiler. These will give closer control of the over-fire draft, and will lower the stack temperature considerably. On similar installations, excellent results have come of aiming for .02" to .04" over-fire draft and smokehood draft of about .10".

So that one of the two draft regulators does not do all the work and keep the other idle, tune them to open to about the same angle.

*Roy Mosoriak* has been appointed sales promotion manager of the Airtemp Div., of Chrysler Corp., Dayton, Ohio. He formerly was with Standard Register Co., and the Lightner Publishing Co.

*Henry S. Norris,* until recently head of the Heating Branch of WPB, has been named vice-president in charge of sales administration for Consolidated Industries, Inc., Lafayette, Ind. The company is a newcomer in the stoker business.

*R. A. Tollefsen,* former chief engineer for the U. S. Gauge Company, has been appointed chief engineer for the Rochester Mfg. Co., Rochester, N. Y., in charge of design of all indicating gauges for temperature, liquid level and pressure. The appointment was effective November 15, and work already has started to enlarge and improve the line.


**HAYWARD OIL BURNERS**

**ROTARY and PRESSURE ATOMIZING TYPES**

Dealer and Distributor Inquiries Invited.

**HAYWARD MFG. CO., INC.**

505 COURT STREET BROOKLYN 31, N. Y.

*The leader in*

WATER LEVEL CONTROLS

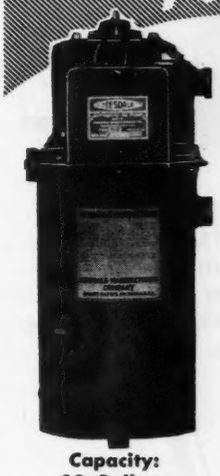
*for design and style*

*has always been*

**Newark Controls**

Bloomfield New Jersey

PRECISELY BUILT for Positive Performance



"The Heart-Beat of the Burner's Oil Flow —"

- Silent and Leak-proof
- Vapor and Oil Tight
- Trouble-free
- Self-Priming
- All Parts Interchangeable
- Passed by the UNDERWRITERS
- Entirely Automatic

Capacity: 30 Gallons per Hour

INQUIRIES INVITED . . .

**TEESDALE T. U. X.**

Fully-Automatic

OIL PUMP

**TEESDALE MANUFACTURING CO.**

427 MARKET AVE., GRAND RAPIDS 3, MICHIGAN

# Manufacturers Activities

## Bacharach Buys Practical

BACHARACH INDUSTRIAL INSTRUMENT Co., Pittsburgh, has purchased the Practical Instrument Co., Chicago, manufacturer of recording instruments, and is moving the entire plant equipment to Pittsburgh, according to R. Ulrich, Bacharach vice-president. Certain improvements will be made in the recorders which will be announced as soon as production is started in about a month.

Portable temperature, humidity and operations recorders formerly made by Practical will be companions in the line of Bacharach's Fyrite $CO_2$ indicators, Draftrite draft gauges and related instruments.

## Press Men at Shell Laboratory

STIMULATED BY WIDELY expressed interest in its new oilburner development, the special combustion head engineered for catalytic heating fuels, described in the September issue of FUELOIL & OIL HEAT, Shell Oil Co. was host on November 19 to a group of trade and professional publication men at its Sewaren, N. J., oil-heating laboratory.

The new burner device was described as another step in the direction of utilizing to the fullest extent every ounce of heat in a gallon of oil. Shell has no plans to manufacture burners but rather is making the new development available to burner manufacturers under a license for incorporation in their new burner units.

## New Michigan Tank Manual

MICHIGAN TANK & Furnace Corp., Detroit, has recently circulated a new instruction manual and installation and service guide for Lochinvar vaporizing equipment. It is importantly educational on pot-type burner operation and maintenance, a particularly thorough job.

## New Marsh Service

MARSH TRITROL, Chicago, has broadened its activities and will now distribute the heating specialties distributed by Jas. P. Marsh Corporation along with the Marsh Tritrol Regulator. To better describe the broadened operations, the firm name is being changed to Marsh Heating Equipment Co. James Emmett, Jr., will head the staff as vice-president in charge of sales.

The purpose of the Marsh Heating Equipment Company is to combine the distribution of Marsh Heating Specialties and the Marsh Tritrol regulator—closely related products—so that a better engineering and consulting service can be rendered those who install or use these products.

## Lieblich Moves Office

H. LIEBLICH & CO., New York, recently has moved to a new office and plant at 36 West 66 Street, where adequate space is available for a complete shop. The company handles S. T. Johnson and Rexoil oilburners.

At an open house, held November 10, Mr. Lieblich presented wrist watches to eight employees who had been with the company for at least ten years.

## R & I Shows Products

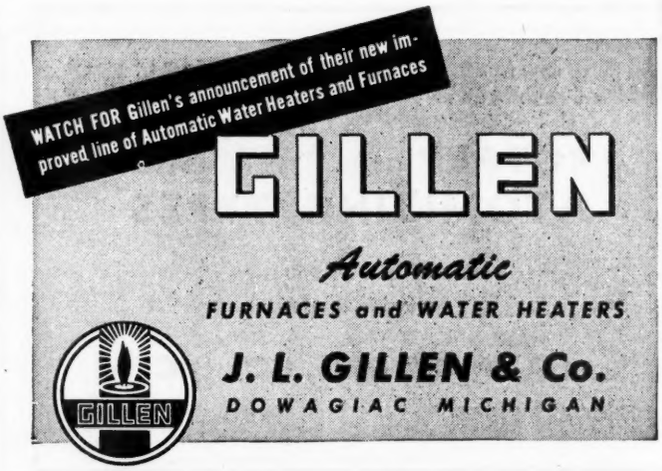
REFRACTORY & INSULATION Corp., New York, has issued a new catalog of R & I

Still the choice of leading boiler manufacturers and heating men after 20 years' nationwide service.

For sale by all wholesalers of plumbing and heating supplies. *Ask For Folder "K."*

THE VINCO CO., Inc.

305 E. 45 Street, New York 17, N. Y.


WATCH FOR Gillen's announcement of their new improved line of Automatic Water Heaters and Furnaces
GILLEN
Automatic
FURNACES and WATER HEATERS
GILLEN
J. L. GILLEN & Co.
DOWAGIAC MICHIGAN

Manufacturers of Rexoil Conversion Burners, Boiler Units, Furnace Units and Direct-Fired Conditioners
ORDER NOW
Rexoil Burners are being shipped as fast as possible . . . but the backlog is growing, so order soon. Remember, you're RIGHT with REXOIL . . . over 60,000 in use.
REXOIL
REIF-REXOIL, Inc.
35 Carroll St. Buffalo, N. Y.

**NEW and IMPROVED**

**"42" Smith**

**BOILER**

**IS FIRST CHOICE . . . WHEREVER HEATING DEMANDS ARE HEAVY**

Here is an improved big cast iron boiler for that heavy duty job . . . whether it be factory, hospital or public building. Known to engineers and contractors as "tops" for use with solid fuels, whether hand or stoker fired, the 42 Smith has recently been redesigned to effect an even further improvement in its already high standard of performance. Check the features of this modern efficient unit against the requirements of that tough job you're figuring now. We think you'll find the 42 Smith a natural!

- ✓—*Water tube construction* promotes efficient water circulation, fast steaming.
- ✓—*Plenty of heating surface.* Even more prime surface has been added in the new model.
- ✓—*Made of rugged cast iron* for long service, low maintenance.
- ✓—*Header type construction* minimizes possibility of mid-season breakdown.
- ✓—*Properly proportioned* for stokers or other automatic firing devices.
- ✓—*Convertible* from one fuel to another both easily and inexpensively.

*Write for free catalogue*

●

**THE H. B. SMITH Co. Inc.**

WESTFIELD, MASS.

*Offices and Sales Representatives in Principal Cities*


products, including Stic-Tite plastic insulation, insulating block and blanket, inside duct lining, #3000 refractory cement, Moldit cements, and oilburner combustion chambers.

### M-H Expanding

MINNEAPOLIS - HONEYWELL Regulator Co., Minneapolis, has announced a $3,500,000 expansion program involving additions to plants and machinery in Minneapolis, Chicago, Toronto and Philadelphia. This new program follows the purchase of a ten-story Minneapolis factory and the addition of four floors to the main plant during the war years, according to Harold W. Sweatt, president. The projected Minneapolis construction will add 120,000 sq. ft. of manufacturing space to current facilities.

### New Shell Lab

SHELL OIL Company is breaking ground in the near future for a new $1,000,000 oil exploration and production center at Houston, Texas. To be completed in the spring, the new laboratory will be devoted to study of new methods of finding oil and getting it out of the ground.

### Petro Publishes Statement

PETROLEUM HEAT & POWER Co., Stamford, Conn., has published a statement for the year ended June 30, 1945, showing a net profit of $117,872.61 on a gross profit of $2,871,829.18 out of net sales of $15,465,391.19. The figures are after taxes, but subject to revision due to renegotiation, though the management does not expect that the profit will be considered excessive.

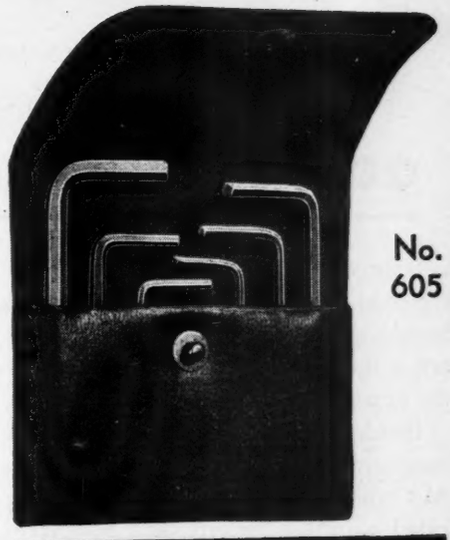
### National Gets Safety Award

NATIONAL RADIATOR Company has received the U. S. Department of Labor's certificate of Safety Achievement in three of its plants for reducing accidents in the first half of 1945. The Plastic Metals Division plant at Johnstown, Pa., and the Lebanon plant achieved a 100% reduction and the New Castle plant reduced accident frequency 81.3% to earn the award for the second time.

### Fitzgibbons Shows War Record

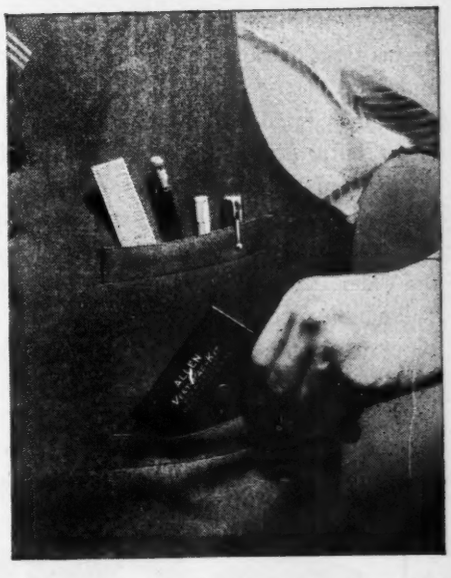
FITZGIBBONS BOILER Co., New York and Oswego, N. Y., has published "The Wartime Story of a Battling Boiler Plant," a record in text and pictures of the produc-


**ALLEN Key Kits**



No. 605

**VEST-PAC-KIT**



**No. 605 — Packet only 3" x 2¾" over-all contains 6 Hex Keys to fit hollow set screws in sizes No. 4, 5, 6, 8 and 10; also ¼" and 5/16". Same keys fit socket head cap screws in sizes No. 4, 5, 6, 8 and 10. Most compact and serviceable little set you could ask for. List price, only 50¢.**

*Ask for complete listings* of Allen Hollow Screw Assortments and Key Kits. Address inquiries and orders to Dep't. M,

**THE ALLEN MFG. CO., HARTFORD 1, CONN., U. S. A.**

FOR FAST AND EVEN HEATING USE

GORTON *Equalizing Valves for Radiators and Gorton Air Eliminators For Mains*

Gorton Valves are the quickest venting valves made with various sizes of air outlets properly designed for automatic heating.

SEND FOR LITERATURE AND PRICES

GORTON HEATING CORP., Cranford, New Jersey

Since 1887 Manufacturers of Heating Equipment

tion for war which has engaged 100% of the company's time for three years. The booklet gives generous credit to all industry in the prosecution of the war, and to the heating industry in particular.

Besides boilers for all purposes, the company has produced hulls for M-3, M-4 tanks and M-7 tank destroyers, fabricated parts for aircraft, and equipment for the manufacture of high octane gasoline and synthetic rubber.

### M-H Special Department

MINNEAPOLIS-HONEYWELL has formed a Specialties Division to handle production and sales of special products, according to John E. Haines, manager of Commercial Control Sales. Martyn Kingsland, manager of the refrigeration controls division, has been made sales manager of the new department which will embrace the older department. The new division will handle modification of the company's regular heating and air conditioning controls for special applications. Immediately the line will include refrigeration controls, mercury switches, remote bulb thermometers, combustion controls, special panels and temperature and pressure alarm systems.

### Consolidated Takes R-S

CONSOLIDATED DESIGN and Mfg. Co., Philadelphia, is taking over the manufacture of the Streamliner domestic oilburner formerly made by R-S Products Co., Wayne Junction. The line includes models from 1.35 to 7 gph, and employs the Mercoid Visa Flame primary control. Pilot production runs have been made on the line, and it is expected that production will start in January.

H. W. Rettew is general manager of the Oil Burner Division; H. C. Armstrong is sales manager; B. F. Gerding is production manager, and R. Berlin is factory superintendent.

### Kalamazoo Has Retail Lab

KALAMAZOO STOVE and Furnace Company, Kalamazoo, has purchased a building in the center of the business district in which an experimental retail operation will be run, according to Arthur L. Blakeslee, president. The company is opening distribution through dealers in addition to branches which it has operated for some years. The new retail laboratory will serve to prove merchandising methods before they are recommended to dealers. One floor will be turned into a sales training school for its staff, branch managers and dealers.

### Gilbarco Shows Plans For Employee Security

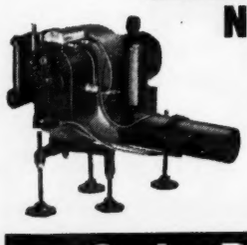
GILBARCO NEWS, the house organ of the Gilbert & Barker Mfg. Co., Springfield, Mass., is devoted entirely in its most recent issue to an exposition of sickness and retirement benefits available to employees. The "Planned Security," under which a number of old employees now are in retirement, also has served to take care of families of service men until they return from the wars, provide disability benefits, hospitalization, and death benefits.

The company also has a thriving Employees' Credit Union with 1500 members and assets of more than a quarter million dollars. Educational benefits are available to employees and their children through scholarships established by The Teagle Foundation, Inc.

Bock OIL BURNING WATER HEATERS

INTERMITTENT OPERATION
ELECTRIC IGNITION
WITH BOTH VAPORIZING AND PRESSURE TYPE BURNERS
*Available in Six Sizes*
WRITE OR WIRE TODAY FOR COMPLETE INFORMATION
BOCK CORPORATION
MADISON WISCONSIN

★ RAYFIELD AUTOMATIC ★



No. 5 OIL BURNERS
REDUCE HEATING COSTS...
INCREASE YOUR PROFITS

Burn No. 5 heavy fuel oil. Self contained, all electric. Self-lubricating. Many new exclusive features. Write for full details

GOOD TERRITORIES OPEN

C. L. RAYFIELD CO.
2010-18 S. Halsted St., Chicago 8, Ill.

# VISCO FUEL OIL HEATERS

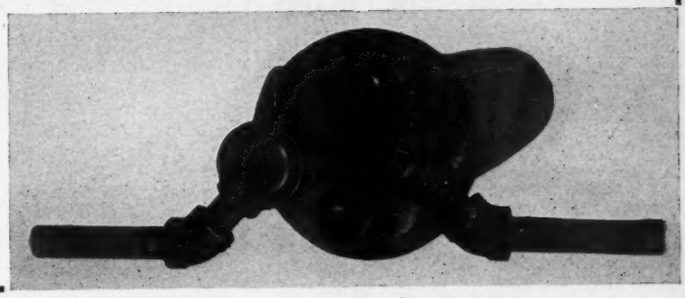
**DON'T REPLACE OR INSTALL A FUEL OIL HEATER UNTIL YOU INVESTIGATE VISCO**

The Heater of simplicity—compactness—and easiest to maintain. Can be cleaned without removing piping. ALL STEEL—NO GASKETS IN THE FUEL OIL COMPARTMENT—BUILT BY—

**Crotty Manufacturing Corp.**

55 West 42nd Street New York 18, N. Y.

Manufacturers of Patented Forced Circulation Systems.
Pat. Pending




## *Oilburning Experience*

(*Continued from page* 38)

550 gallons, an amount utterly inadequate to have heated the house or any part of it to a habitable temperature. The house would have been, for practical purposes, uninhabitable for most of the winter unless an allowance of some 500 or 600 gallons more oil could have been obtained and all heat cut off from the sleeping rooms.

For the three years of rationing this extra amount of oil would have been about 7,500 gallons, whereas we were completely comfortable with a total consumption of 4,720 gallons or a saving of some 2,800 gallons which at 9¢ per gallon would have cost $250.

There are in this country literally thousands of installations which are no better than the one I discarded. The reason why many of them are in use is the ignorance of the public as to the value of more economical plants and the silence of oil salesmen interested only in a commission of so much per gallon, men who won't give advice which would cut their commission. To gain the commission on a thousand gallons or so of oil he jollies his prospect into paying some $70 for oil and when information is sought as to a more economical installation it is argued against on all kinds of really untenable grounds.

The writer is one of thousands whom such salesmen would gladly see spend an extra 30% or more for oil. They grow fat on wastages, such as 1,350 gallons above referred to—enough gallonage to drive an ordinary automobile over 20,000 miles—enough waste to fully heat a slightly more modest home.

Notwithstanding the fact that high economy boiler-burner units were in use for many years before the war, the industry with rare exceptions, found it expedient to load the public with oil wasting installations. Their sins found them out and their legitimate offspring was rationing, a program by which millions were sentenced to inadequate heating, inconvenience and in many cases suffering, all to reduce the oil consumption to an amount which would have been in excess of what an efficient plant would have needed.

May I suggest that the industry sin no more and atone for its misdeeds by discouraging the further use of such wasteful plants. Let what was once known as a conversion job be processed by reconversion into something to be proud of and conserve our oil resources for future generations.

◈

*Maj. Robert J. Bowman* has been awarded the Bronze Star for his services as Deputy Chief of Coal Operations in the European Theater of Operations. He formerly was with General Appliance Corp., East Orange, N. J., and later was in charge of the oilburner division for R. H. Perry & Co., Jersey City, N. J. Maj. Bowman also has received the Order of the Crown from Belgium.

*A. C. (Gus) Schroeder,* former oilburner distributor in the New York area, has joined the W. N. Best Combustion Equipment Co., in charge of merchandising. He will make his headquarters at the Carlstadt, N. J., plant.


**A TIMELY SPECIAL!!**

We offer a combination package of items which should be in every serviceman's car.

CONVENIENTLY PACKAGED—SPECIALLY PRICED

| | REG. PRICE | TOTAL |
|---|---|---|
| 2—Qt. Cans—Asphalt Paint | $.35 ea. | $.70 |
| 2—Qt. Cans—Chem-"B" Boiler Cleaner | 1.50 ea. | 3.00 |
| 2—No. 1 Cans—Boiler Solder (Chem-Metallic Weld) | 2.25 ea. | 4.50 |
| 2—1 lb. Cans—Chem-"O" Fuel Oil Tank Cleaner | .75 ea. | 1.50 |
| 2—4 lb. Cans—Furnace Cement | .36 ea. | .72 |
| 2—5 lb. Cans—Oil Line Cement | 1.15 ea. | 2.30 |
| 2—2 lb. Cans—Chem-"S" Soot Destroyer | 1.50 ea. | 3.00 |
| 1—Soot Gun | .50 ea. | .50 |
| TOTAL | | $16.22 |

**SPECIAL PRICE—$10.00** F. O. B. Marlboro, N. J.

*Send your order direct to factory!*

**CHEM-ALPHA, INC.**

MARLBORO, NEW JERSEY

**OIL SOOT E-Z DESTROYER**

**CUT OIL HEATING COSTS**

Simply spray E-Z and soot vanishes instantly. Customers always satisfied. One trial will convince you.

"EASY TO USE—
ECONOMICAL TOO!"

**DISTRIBUTORS:** *Write for fine proposition.*

HEALY-RUFF COMPANY, 797 Hampden Ave., St. Paul, Minn.
Enclosed find check ( ) money order ( ) Send the following prepaid:

No. 1 pkg.....$1.00
No. 5 pkg..... 4.50

Name .....
Address .....
City..... State.....

PARAGON
NONE BETTER OIL BURNERS
Write for Details
Paragon Oil Burner Corp. Bridgewater St. at Newtown Creek, B'klyn 22, N. Y.
ACTION THAT SPEAKS LOUDER THAN WORDS...
DEAR SANTA— PLEASE COME DADDY SEZ OUR CHIMNEY IS CLEANER SINCE WE HAVE A PARAGON BURNER
1ST in N.Y.C. SALES
PUT PARAGON SELLING ACTION TO WORK FOR YOU

## *Oilheating Trends*

(*Continued from page 11*)

ers that while the oil may not now be as light as prewar they plan to make it that way. The weight of this factor is found in 44% of dealers reporting from all sections of the country saying their suppliers promise a lighter product, and 56% reporting that they have no such expectation.

LABOR SITUATION: The oilheating industry is probably not involved in the current labor problems to the degree that some other industries find themselves, yet broadly speaking, there is considerable pressure being exerted for upward wage adjustments. Thinking first of oil truck drivers, 41% of reporting dealers say these men are unionized, with about four out of five AFofL and the remainder CIO or other types of unions.

Demands or requests for wage increases since V-J Day have been received by 54% of the reporting companies. Interestingly, however, among those companies with union drivers only 45% say they have had recent wage increase demands. Actual hourly wage rates for truck drivers among all reporting companies are now 27% above 1941. Among those companies with union drivers the average wage rate increase since 1941 has been only 19%, although it is recognized that the union rates were probably higher at the start.

Reporting on burner service men, 24% of dealers say they are unionized, and again the ratio is about 80% AFofL. As a coincidence, the number of dealers whose men have asked for increases since V-J Day is 54%, the same as it was with oil truck drivers, and the average hourly wage of service men today is 27% above 1941, also the same rate increase shown for oil truck drivers. The union influence, however, shows up stronger in considering burner service men, for 86% of unionized service men have asked for recent wage increases. There is no difference among service men between the average hourly rate increase, union or nonunion, since 1941, with both reported as averaging 27%.

It is apparent that among oilheating and fueloil dealers, the union has had little affect one way or another upon either actual rate of wage increase or upon recent demands for increases.

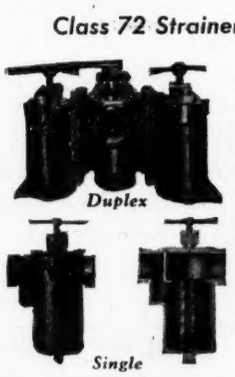
*John R. Hertzler* has been elected vice-president of the York Corp., York, Pa. He recently was released from duty as a Lt. Commander by the Navy, and returned to the company, with whom he has spent his entire business career since graduating from Lehigh University in 1927. He was general sales manager of the company at the time of his entrance into the Navy three years ago.

*Paul W. Kohler* has been made manager of advertising and sales promotion for Westinghouse Electric Appliance Division at East Springfield, Mass.

KRAISSL
FILTERS
STRAINERS
PUMPS
Keep Fuel Oil Lines Open and Active

**Year-in, year-out performance proves the skill of KRAISSL engineering design and the honesty of KRAISSL manufacture.**

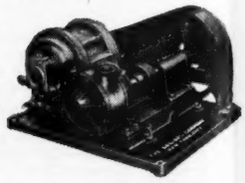
*Class 72 Strainers and Filters*




Single and Duplex types for suction or discharge service—any practical degree of filtration in units dosigned for low pressures as well as up to 500 lbs. hydrostatic test—easily removable filter basket insures quick cleaning.

*Class 60 Heavy Oil Pumps*

Standard equipment wherever independent pump and motor sets or booster pumps for pump-type burners are required.



Submit your fuel-line problems to KRAISSL engineers—literature and prices on request.

KRAISSL THE KRAISSL COMPANY
HACKENSACK, N. J.

# TWO OUTSTANDING FUEL OIL FILTERS

## By General

Now meet all the requirements of the Fuel Oil burner industry. For all burners from the largest pressure type to the smallest pot type.

**Good Jobber and Dealer Profits.**

**De Luxe Model 2A300**

**Low Priced Model 1A25**

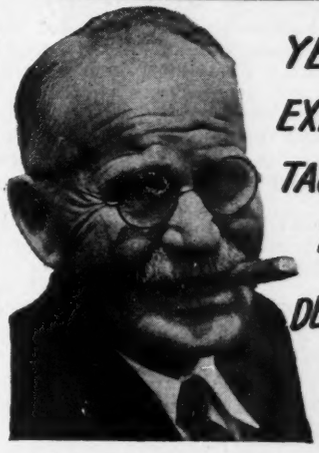
**General Filters, Inc., 14435 Grand River Ave., Detroit 27, Michigan**

***Listed: Reexamination Service, Underwriters' Laboratories.***


## DEGREE DAY TABLES

| ONE MONTH ONLY — October | | | | | SEASON TO DATE — (Sept. 1 to Oct. 31) | | | |
|---|---|---|---|---|---|---|---|---|
| Normal | 1944 | 1945 | Percent Change* | | Normal | 1944 | 1945 | Percent Change* |
| 410 | 512 | 502 | +22.3 | Albany | 526 | 639 | 613 | +16.5 |
| 130 | 130 | 128 | ... | Atlanta | 142 | 134 | 128 | — 9.9 |
| 230 | 246 | 206 | —10.4 | Baltimore | 264 | 273 | 225 | —14.7 |
| 338 | 363 | 368 | + 8.8 | Boston | 436 | 453 | 439 | ... |
| 410 | 467 | 470 | +14.6 | Buffalo | 535 | 586 | 595 | +11.2 |
| 334 | 373 | 424 | +26.8 | Chicago | 418 | 450 | 552 | +32.0 |
| 274 | 291 | 292 | + 6.5 | Cincinnati | 326 | 332 | 315 | — 2.7 |
| 354 | 383 | 407 | +14.9 | Cleveland | 446 | 472 | 483 | + 8.3 |
| 70 | 30 | 75 | + 7.1 | Dallas | 75 | 30 | 93 | +24.0 |
| 415 | 306 | 345 | —16.8 | Denver | 539 | 393 | 576 | + 6.9 |
| 357 | 284 | 386 | + 8.1 | Des Moines | 456 | 354 | 534 | +17.1 |
| 387 | 388 | 433 | +11.7 | Detroit | 496 | 479 | 542 | + 9.3 |
| 433 | 418 | 462 | + 6.7 | Grand Rapids | 559 | 518 | 612 | + 9.5 |
| 368 | 430 | 432 | +14.8 | Hartford | 474 | 517 | 509 | + 7.4 |
| 601 | 505 | 486 | —19.0 | Helena | 889 | 773 | 865 | — 2.4 |
| 27 | 8 | 33 | +22.2 | Houston | 27 | 8 | 33 | +22.2 |
| 299 | 292 | 402 | +34.0 | Indianapolis | 364 | 326 | 460 | +26.4 |
| 242 | 145 | 253 | + 4.5 | Kansas City | 292 | 168 | 315 | + 7.9 |
| 43 | 34 | 27 | —37.2 | Los Angeles | 48 | 39 | 29 | —39.6 |
| 218 | 229 | 238 | + 9.1 | Louisville | 252 | 245 | 250 | ... |
| 409 | 430 | 504 | +23.2 | Milwaukee | 529 | 546 | 674 | +27.4 |
| 484 | 425 | 559 | +15.5 | Minneapolis | 647 | 506 | 733 | +13.3 |
| 23 | 13 | 8 | —65.1 | New Orleans | 23 | 13 | 8 | —65.2 |
| 274 | 283 | 276 | ... | New York | 325 | 318 | 309 | — 4.9 |
| 325 | 258 | 315 | — 3.0 | Omaha | 406 | 320 | 431 | + 6.2 |
| 236 | 254 | 365 | +54.7 | Philadelphia | 272 | 285 | 403 | +48.2 |
| 324 | 383 | 387 | +19.4 | Pittsburgh | 393 | 469 | 449 | +14.3 |
| 459 | 542 | 593 | +29.2 | Portland, Me. | 638 | 734 | 771 | +20.8 |
| 298 | 155 | 332 | +11.4 | Portland, Ore. | 407 | 223 | 470 | +15.4 |
| 363 | 331 | 408 | +12.3 | Providence | 467 | 392 | 485 | + 3.8 |
| 218 | 173 | 259 | +18.8 | St. Louis | 254 | 190 | 313 | +23.2 |
| 377 | 214 | 307 | —18.5 | Salt Lake City | 472 | 281 | 518 | + 9.7 |
| 140 | 127 | 154 | +10.0 | San Francisco | 262 | 276 | 255 | + 2.6 |
| 614 | 658 | 669 | + 8.8 | Sault Ste. Marie | 895 | 939 | 1023 | +14.4 |
| 372 | 231 | 359 | — 3.4 | Seattle | 546 | 324 | 581 | + 6.4 |
| 369 | 420 | 452 | +22.5 | Toledo | 467 | 523 | 544 | +16.4 |
| 254 | 280 | 240 | — 5.5 | Washington | 297 | 304 | 256 | —13.7 |

*Compared with normal.

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